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B. BURGESS, CAPTAIN,

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WHITEHALL YARD,

May 1889.

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The Journal
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MILITARY PRIZE ESSAY.

"DISCIPLINE": ITS IMPORTANCE TO AN ARMED
FORCE AND THE BEST MEANS OF PROMOTING AND
MAINTAINING IT.

By Captain J. F. DANIELL, R.M. Lt. Infantry.

"Respite Finem."

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THE idea expressed by the familiar word "discipline" is one which is of an exceedingly complex nature, and consequently very hard to define; in fact, if what may be called the leading features are dealt

with, and reduced to an exact definition, there are so many side issues which necessarily present themselves to the mind, that any terse and brief definition cannot fail to be more or less unsatisfactory. Like many other perfectly familiar ideas—of which everyone fancies that he has the true meaning—it will be found that to different people the word conveys in many ways a different meaning, according to the natural bias of their minds; and farther, that a very common error is often made, and the result of discipline is confounded in the mind, and too often in practice, with discipline itself; so that from want of a true logical insight into the essential features of the matter, the effect is confused with the cause.

Nevertheless, under all the ideas of discipline, which would be expressed by various minds viewing the subject in different lights, there is to be found one strong point of resemblance, namely, an idea of conformity—conformity to some ideal, expressed or understood.

Now, important as it is that everyone should have a clear and definite understanding of the ideas they habitually express by their words, and, consequently, should clearly know what they mean when they speak of discipline, to no class is it more important to have a right understanding on this special point than to those engaged in the profession of arms, for on this depends the sound and healthy working of the whole of the complicated machinery of which each individual in the profession forms a part, and right ideas will infallibly lead to success and honour, just as surely as wrong ones will lead to disaster and disgrace.

"Discipline," says a great military writer, "is made up of a number of very different qualities,"¹ and it is only by a proper appreciation of these qualities, and a due knowledge of their action and reaction upon one another, that a successful discipline can be obtained, and, when obtained, can be kept up; for this, like every other moral or physical quality, can only be maintained in a flourishing condition by constant exercise, and is one which is very prone to deteriorate unless carefully and judiciously watched and guarded.

Of course it is not intended to convey that the question is one of theory; it is, on the contrary, essentially one of practice; but every practice, even of the simplest kind, is more or less founded upon some theory, and theory becomes objectionable only when it is pushed out of its place, and instead of being used to preserve a just balance and produce a rational mode of action, is allowed to overbalance the scale and produce an absurdity.

"Those who have particular callings," says Locke,² "ought to understand them; and it is no unreasonable proposal, nor impossible to be compassed, that they should think and reason right about their daily employment."

Universal consent would be given to this opinion in every walk of life, and surely no less by soldiers than by others; and among all the minutæ of their daily employment upon which they are called upon

¹ Hamley: "Operations of War."

² Locke: "Of the Conduct of the Understanding," p. 29.

to "think and reason right," what more important and more constantly before the mind than this great one of discipline?

Taking the question, then, now simply as one of discipline in relation to an armed force, a consideration of it under this special point of view must take a middle course between the two extremes. On the one hand, a too rigid insistence on the mental view—that of the philosopher—must be avoided; and, on the other hand, a too rigid insistence on the physical view—that of the athlete.

Military discipline consists of a happy combination of these two views; and a just idea of their relative value, combined with a sound practical knowledge, is the foundation of a good system.

The nature of man being such as it is, he is swayed by two different and often contradictory forces—the mental and the physical; and no rules can be formed for his general guidance which solely take into account either of these forces to the exclusion of the other; for the result of any such one-sided rules must inevitably be that less is got out of the human machine than it is actually capable of; while a due combination of the two will utilize every available power, minimize waste, and produce a result the more perfect the more evenly balanced the different factors are. It is unnecessary to go into detail with regard to the various emotions to which man, by his nature, is subject, and to the counterbalancing, controlling, or directing of which discipline is directed; for, from a soldier's point of view, at any rate, they are familiar to all who have ever given any thought to the subject. On the one hand, discipline aims at overcoming fear, love of pleasure, indolence, and recklessness, with the view of bringing the whole nature under control; while on the other it aims at guiding and directing the more noble emotions of enthusiasm, patriotism, and devotion to a leader; so that these too may be brought into harmony with the general whole; and, above all, it aims at inspiring a strong sense of duty, to become, as it were, a second and inalienable nature.

Indeed, this latter quality may almost be said to include all the former, for if the many striking instances of the results of military discipline which history records are carefully studied, it will be found that the sense of duty carried out even to the disregard of every other feeling has been the mainspring of each and all of them, and if this has been so in the past there is no reason to suppose that it will be otherwise in the future.

Such a sense of duty as is required is no plant of a spontaneous growth, but must be carefully cultivated and tended, and to this end the means of promoting and maintaining discipline must be directed. The practical method of producing and maintaining this quality in the most perfect degree is the problem to be solved.

In a lecture delivered many years ago it was said that the whole interest of a soldier's work in peace-time centred in the development in each rank of an effective organic unity, and a power in an army of acting as one body, animated by one spirit,¹ and this describes what

¹ Lecture on the "Connection between the Ordinary Work of Soldiers in Peace-time and Warlike Efficiency," Maurice, 1873.

discipline has to do. This is the object to be aimed at, the development of an effective organic unity, and to this end all efforts must be directed.

Habit is as all the world knows a very strong motive power, and one which has in itself an innate faculty of increase of strength and energy. Habits, bad or good, once formed by the repetition of certain acts, or even mental processes, gradually become a part of the life of the individual, and, finally, are almost unconsciously obeyed. Of what vast importance it is then that in the case of a soldier care should be taken that the habits implanted in his nature in the ordinary everyday routine of his military life should be such as will increase his value when called upon to act in any, however humble a capacity, as one of a corporate body from which unanimity and uniformity are imperatively required.

It has to be borne in mind further that the requirements of the present day are something more than those of a past time, not so very many years distant. All that was ever demanded from a soldier is demanded still, and the development of military science makes yet further demands, but the progress of the age has also produced a class of soldier from whom more may justly be required. The private soldier of to-day is a very different sort of man from the private soldier of even thirty years ago, his mental qualifications are of a far higher order, he is better educated, has more respect for himself, and is altogether of a more independent character, by which is meant that he is more capable of acting alone, and far more capable of understanding the reasons why, under certain circumstances, he is required to act in certain ways.

Of course this development and progress has not been, and is not, without its dangers; where "organic unity" is required, individuality cannot be allowed to reign unchecked, consequently the problem of to-day is even a harder one than that of former years, for, recognizing an increased individuality, this quality has to be guided and controlled without being stifled.

In every profession, whatever it may be, the man who is engaged in it gradually forms habits and ways of thinking which conform to his profession, and consciously or unconsciously he lays up in his mind a store of rules, which will guide his action in various circumstances as they arise, and just in proportion as his actions are founded upon sound conclusions so will his practice be sound and right.

Skill in a profession is the instantaneous and almost unthinking adaptation of a physical to a mental process, and the more rapid and perfect the adaptation, the greater the skill. A musician who pauses even for a fraction of a second to think how a chord must be struck is but an imperfect performer, and in the profession of arms this principle especially holds good. A soldier cannot, and dare not in many instances, stop to consider the why and wherefore of his action, the action must be instantaneous, and yet it must be adapted to its end, consequently he must be so trained that right thought and right action are practically one and the same thing.

There is no subject perhaps on which we hear more than on this subject of discipline, and from the earliest days of our military life we have had the idea instilled into us till we say and think that discipline is the mainspring of the machine. True! but what is this discipline? Surely not merely the habit of obedience, though that is a great part of it, but something over and above this, a series of qualities of which obedience is the foundation, and which culminate in the subordination of every thought and feeling to the idea of duty.

We all start rightly; obedience we are told is the soldier's first duty, and we learn obedience, but are we not sometimes apt to think that it is not only the first but the whole duty of the soldier, and consequently we fall short of the perfection of training which all should endeavour to attain?

A "rigid disciplinarian" is a very familiar phrase, but too often it conveys a very misleading idea, the idea of one who rigidly enforces a penal code. This is without doubt a necessary part of what is wanted, but it is not all, it is a means, not an end, and discipline in its complete sense means a great deal more than this, and requires much greater exertion on the part of the disciplinarian as well as on the part of the disciplined.

Enough has now been said on the subject generally to exhibit the manifold and complex nature of the quality we wish to obtain, and to give equal prominence both to the mental and physical aspect, so that, having the objective clearly in view, the subject may be dealt with in a practical manner by consideration of the existing means of promoting and maintaining discipline, and how far they are adapted to the desired end, as well as of the ordinary causes which militate against it and how far they may be counteracted. First, however, the importance of discipline to an armed force must be dealt with.

Importance of Discipline to an Armed Force.

This is a point which it is hardly possible to exaggerate or insist upon too strongly. To realize it, one need only glance at the military history of past years, where nearly every page brings out more or less either positively or negatively the value of habits of discipline, and the exceeding danger of the want of such habits. The organic unity which is needed for the ordinary routine of peace becomes ten-fold more necessary in the theatre of war when such mighty issues depend upon the perfection of each smallest link in the chain. In peace-time a laxity of discipline will cause inconvenience, annoyance, and a good deal of extra trouble to everyone concerned; in war-time it will cause disaster and ruin.

To troops whose discipline is imperfect either victory or defeat will be equally dangerous, in either case they will get out of hand, and the unity of the military machine will be gone; to those whose discipline is thoroughly good, difficulties become light, and the apparently impossible becomes the possible.

A very striking instance of the former case is afforded by the

retreat of Marshal MacMahon's army after the defeat at Woerth in the campaign of 1870; discipline was weak, and as a result, within a very few days of the commencement of a war, two army corps were for the time being practically out of the question, so far as offering any resistance to an advancing invader was concerned.

General Hamley points out clearly how this affected the campaign, for it could hardly have been conceived, indeed it was not conceived by the Germans, that MacMahon could be so pushed out of the theatre of war, and his troops so demoralized, that for nine days they were unable to exercise any influence on the operations.¹ Now there must have been some cause for this, and the cause will be found in a great measure inherent from the very outset, in the conduct of the French. Organization was bad, and what is organization but a test of discipline? Orders and counter-orders followed one another in rapid succession; co-operation between corps which had been intended never came to pass; the probable course of events had not been duly estimated, and unexpected occurrences caused alarm, alarm grew to panic, and so came about the lamentable spectacle of an army, a part of which had scarcely struck a blow, utterly demoralized, and for the time being ineffective and powerless.

The men had lost confidence in themselves and their leaders, and with confidence gone, the remnants of discipline quickly followed. Now it may be said that this was attributable to the commanders and to the faulty system, and so is a question rather outside that under consideration, but the principle contended for is the same for all ranks, and if the high sense of duty, with all that it involves, is present throughout an army, mistakes will not be so disastrous nor misfortune so overwhelming as in the case in point.

Laying aside, however, the case of the higher commanders and the errors of the system, and considering merely that of the mass of the army from the point of view of discipline, there certainly was not present that spirit which should exist in an armed force, and, as has been said, this is in a great measure seen from the very commencement of the struggle. All the false and noisy excitement which was displayed during the preliminary period boded ill for the future, should not everything go smoothly, and very soon the froth and bubble was gone, and for the time there was nothing to take its place, for the lesson had not then been fully learnt.

Confidence and enthusiasm, if based upon a sure foundation, are excellent and invaluable aids to discipline and consequent success, but the right spirit must be underlying them, the spirit which is formed by rigid training, which sees the problem, grasps the difficulty, and is nerved to meet it with a manly determination to succeed; for if based upon other grounds, if merely the echo of the cry of the many-tongued populace concealing ignorance or unpreparedness, they are indeed but the fabric of a house built upon the sand.

The following picture of the camp at Chalons, about the 17th August, 1870, and of the men who went to join it, is instructive.

¹ Hamley: "Operations of War," p. 326.

A French Officer ordered to the camp travelled from Paris in a train crowded with detachments of all arms, and this is his description of his journey.¹ "The behaviour of the troops conveyed by the train was deplorable. It was impossible to induce them to remain quietly in their seats; over-excited by the copious libations in which they had indulged before starting, and which were supplemented by the relays of drink they had brought with them, impatient, too, as all travellers are, by reason of continual stoppages, uncomfortable carriages, and a snail's rate of progressing, they rushed to and fro, piled themselves up in the same compartment, made excursions on the baggage-trucks, along the footboards, tore their uniforms, &c." While all this was going on, he says that "the Officers dared not say a word, or if they did open their mouths they gave the word of command with that timidity which is so sure a sign of a defeated and demoralized army, and of leaders who are reduced to endeavour by dint of platitudes to gain the forgiveness of their inferiors for hardships borne in vain and battles unskilfully fought."

On arrival at Chalons he thus describes the scene: "Disorder reigned supreme in the camp, which appeared as if it were given over to pillage; . . . instead of begilt Generals there were Commanders in dirty uniforms, who seemed afraid of showing themselves to their men. Instead of the fine regiments of other days, there was a mass of beings without discipline, cohesion, or rank—the swarm of dirty unarmed soldiers known as the *isolés*. There outside the tents and huts—there was no room for them inside—squatting or lying round the bivouac fires without any regular telling off, without arms, and with their uniform in tatters, were the *isolés* of MacMahon, the fugitives from Reichshoffen, the remnants of regiments overwhelmed and dispersed by defeat; soldiers of the line without rifles or ammunition pouches, Zouaves in drawers, Turcos without turbans, dragoons without helmets, cuirassiers without cuirasses, hussars without sabretaches."

This is a picture of troops without the cohesion which discipline imparts, reduced to a mere rabble by defeat and disorderly retreat.

Instances might be multiplied: the surprise of the 5th French Corps at Beaumont is almost impossible to understand on tactical grounds, the most cursory inspection of the ground at this place shows how very much might have been done to hinder and delay the German advance, but apparently nothing was done at all, the enemy was allowed to traverse unopposed the difficult and intersected ground where he was restricted to certain definite lines of advance, and to open fire at close range on the luckless camp in the hollow south of Beaumont. It is impossible to believe that this disaster was caused by want of tactical skill, for the problem before the Commander was such an elementary one; the reason must be sought in the utter state of demoralization into which the corps had fallen, where the bonds of discipline were not strong enough to enable even the most

¹ "Journal of a Staff Officer in Paris during the events of 1870-71," Comte d'Herisson, pp. 17, 18.

ordinary duties incumbent on an army in the face of an enemy to be carried out.

In a note to Colonel Graham's translation from "The Tactical Deductions from the War of 1870," there is a characteristic anecdote which well illustrates the point under discussion.¹

"Two companies which had been separated from the 6th Corps chanced to meet the head of the 10th (German) Division. Although their retreat was not cut off, they made signs that they surrendered. By chance some men fired into them, upon which they took to flight. But the two Captains came over to us and surrendered, saying—*'Il n'y a plus rien à faire avec cette canaille là.'*"

Again, a French prisoner after Sedan told Captain Boguslawski, with an expression of intense disgust, "*Nos chefs ce sont des canailles. Ils m'ont défendu de manger une pomme.*"² Now about these two instances—they express both on the part of the Officers and the men a state of feeling which is exactly what ought not to exist, and show a lack of that mutual confidence between Officers and men which is all essential.

But to turn to a brighter side. What but the right sort of discipline long made the English line the admiration and dread of their foes in massive columns, which kept the thin squares at Waterloo firm against the repeated onslaughts of the French Cuirassiers, which carried our little force through all the horrors of the Crimean winter, and the wearisome and depressing work in the trenches? Poorly clad and scantily fed, that grand principle "of getting duty done as duty"³ carried them through it all; and in recent years the same principle has brought them through the toil under an Eastern sun, against the cataracts of the Nile, through the long hot march across the Bayuda Desert, a little handful surrounded by hordes of warlike tribesmen, through long trying months of inaction in the enervating climate of the Soudan, and will we hope and believe again bring them through any other trial of courage and endurance which they may be called upon to undergo.

In the actual stress of battle the all-absorbing struggle for life will keep men braced up to their task, but when the blood is warmed with no keen excitement, when the frame is wearied with long marches, and the mind with uncertainty as to what may happen, then it is that a good discipline makes itself evident more than at other times, and then must a leader feel that on the existence of it all depends.

Necessary as it is to preserve discipline during the fight, it is more necessary still in all those multifarious operations of war which culminate in the battle. When the bullets are actually whistling round them, there are many feelings which carry men on to their goal. In the excitement and tension of the nerves attendant on such moments, with some the innate savagery of human nature wakes up

¹ "Tactical Deductions from the War of 1870-71," Boguslawski, p. 70.

² *Ibid.*

³ "Connection between the Ordinary Work of Soldiers in Peace-time and Warlike Efficiency," Maurice, 1873.

and overbalances other feelings, with others the positive knowledge that the forward path is the safer, all tend to make men go on; but when the din of battle is not raging, when each man has full consciousness of fatigue, hunger, and uncertainty, then there is no other feeling to keep him up but that stern sense of duty as duty, in other words a sense of discipline.

Yet again there is another time when this is all-important, namely, in the moment of victory, and this for two reasons, firstly, a tactical one, lest, when the cohesion of the attacking force has been lost, as inevitably it will be lost in the assault, and the reserves, perhaps, swallowed up to give weight to the decisive stroke, the enemy should be able, by a dexterous counterstroke from fresh troops, to turn the tide of battle and roll back the victors in confusion: secondly, a moral one, lest when the position is carried and the enemy is in retreat, the savage spirit which may have been roused in the attack should lead individuals to commit acts which in cooler moments they would shrink from, and which may stain the lustre of the country's arms. Those who have had experience of battle-fields will not be insensible to the importance of a very strict sense of discipline at this critical moment.

The necessity of discipline during retreat has been sufficiently shown by the example above quoted of what MacMahon's Army was without it, in its retreat from Woerth, but the case may be further strengthened by an example which tells in the other way, namely, the wonderful manner in which the Grand Army in its retreat from Moscow, though beset by every conceivable disadvantage, effected the passage of the Beresina in the presence of the enemy.¹

In spite of the hardships and privations which this army had undergone, and the dispiriting sense of the failure of their enterprise under which they must have been labouring, there was that spirit alive in them which enabled them to perform this great feat of skill and endurance, which certainly could never have been carried to a successful issue had not their sense of discipline been strong enough to survive the shocks to which it had been exposed, and to make them remember that though misfortune had come heavily upon them they were soldiers still, and the conditions of duty were in no wise altered.

There is one more remarkable though well-worn instance of the power of discipline in the field which may well be quoted here, as it refers to another set of circumstances, namely, those of the borderland between the march and the battle, when the troops have felt the enemy, and can see their objective, but are yet hardly in the fight, and this is the instance of the attack of the Prussian Guard against St. Privat. This attack teaches two lessons on this subject arising from one and the self-same set of actions.

The incident has formed the matter for so much thought and study on the part of students of military history; so many masters of the art of war have commented upon it, that it has been as it were dissected

¹ "Minor Tactics," Clery.

and laid bare for anatomical consideration by those who would learn how battles are won. One point seems to be brought out quite clearly, and that is that the attack was premature, and was not in perfect conformity with the general design at the time it took place. This is, perhaps, not the only instance in the Battle of Gravelotte to which this remark equally applies, but it is sufficient for the present purpose to consider this one case.

"Perhaps the Army," says Colonel Home,¹ "did not expect more from the Guard than from other corps, but the Guard most certainly did, and a certain feeling of regret that they had not been engaged undoubtedly was felt throughout this body." Now, if this be the case, here, as he points out, is a glimpse of the reason which led to the premature judgment "that the enemy had been sufficiently shaken to risk an attack across the open and gently ascending ground."² In other words, the Guard wanted to be in the fight, and into it they went with a gallantry and pluck which is beyond all praise. But was it strict discipline? Ought a Commander to be at all led, even by such a laudable motive, when the time is not ripe for action?

Of course he cannot, and must not be a mere machine to abide strictly and undeviatingly by the letter of his instructions if the circumstances change, but in this case they had not changed.

In a lecture recently delivered by an Officer who is familiar with every minutest event of the Campaign of 1870, this point is very trenchantly dealt with when he says that steps must be taken to prevent such events as the Guard entering the battle of Gravelotte without orders.³ Here is one of the lessons which the incident is quoted to illustrate—discipline is needed to keep a Commander from such enterprises as these, for however much we may glow with admiration at their gallantry, yet unnecessary loss of life is not for the good of the army nor of the country.

On the other hand, we can learn yet a further lesson; where would the Guard have been on that day unless the men, the rank and file, had been perfectly disciplined?

Launched up that gently sloping ascent between St. Marie aux Chênes and St. Privat, exposed in a close formation to the unceasing hail of bullets, unable for some time to produce any effect with their own weapons at the range at which they were, what kept them there at all, but discipline?

The cemetery on the top of the hill tells the story of this attack only too plainly; decimated though they were, yet the battalions held on, till after long waiting they could advance again, this time to be victorious, but at what cost! In short, the incident shows us plainly how necessary a rigid discipline is on the part of Commanders, so as not to allow them to risk their men unnecessarily, and on the part of all subordinates, so that they may cheerfully and steadily obey, in whatever position their Commander may have placed them.

¹ "Précis of Modern Tactics," Home, p. 76.

² Duke of Wurttemberg, quoted by Colonel Home: "Précis of Modern Tactics," p. 75.

³ Lecture delivered at Aldershot, 1888, Colonel Lonsdale Hale.

and overbalances other feelings, with others the positive knowledge that the forward path is the safer, all tend to make men go on; but when the din of battle is not raging, when each man has full consciousness of fatigue, hunger, and uncertainty, then there is no other feeling to keep him up but that stern sense of duty as duty, in other words a sense of discipline.

Yet again there is another time when this is all-important, namely, in the moment of victory, and this for two reasons, firstly, a tactical one lest, when the cohesion of the attacking force has been lost, as inevitably it will be lost in the assault, and the reserves, perhaps, swallowed up to give weight to the decisive stroke, the enemy should be able, by a dexterous counterstroke from fresh troops, to turn the tide of battle and roll back the victors in confusion: secondly, a moral one, lest when the position is carried and the enemy is in retreat, the savage spirit which may have been roused in the attack should lead individuals to commit acts which in cooler moments they would shrink from, and which may stain the lustre of the country's arms. Those who have had experience of battle-fields will not be insensible to the importance of a very strict sense of discipline at this critical moment.

The necessity of discipline during retreat has been sufficiently shown by the example above quoted of what MacMahon's Army was without it, in its retreat from Woerth, but the case may be further strengthened by an example which tells in the other way, namely, the wonderful manner in which the Grand Army in its retreat from Moscow, though beset by every conceivable disadvantage, effected the passage of the Beresina in the presence of the enemy.¹

In spite of the hardships and privations which this army had undergone, and the dispiriting sense of the failure of their enterprise under which they must have been labouring, there was that spirit alive in them which enabled them to perform this great feat of skill and endurance, which certainly could never have been carried to a successful issue had not their sense of discipline been strong enough to survive the shocks to which it had been exposed, and to make them remember that though misfortune had come heavily upon them they were soldiers still, and the conditions of duty were in no wise altered.

There is one more remarkable though well-worn instance of the power of discipline in the field which may well be quoted here, as it refers to another set of circumstances, namely, those of the borderland between the march and the battle, when the troops have felt the enemy, and can see their objective, but are yet hardly in the fight, and this is the instance of the attack of the Prussian Guard against St. Privat. This attack teaches two lessons on this subject arising from one and the self-same set of actions.

The incident has formed the matter for so much thought and study on the part of students of military history; so many masters of the art of war have commented upon it, that it has been as it were dissected

¹ "Minor Tactics," Clery.

and laid bare for anatomical consideration by those who would learn how battles are won. One point seems to be brought out quite clearly, and that is that the attack was premature, and was not in perfect conformity with the general design at the time it took place. This is, perhaps, not the only instance in the Battle of Gravelotte to which this remark equally applies, but it is sufficient for the present purpose to consider this one case.

"Perhaps the Army," says Colonel Home,¹ "did not expect more from the Guard than from other corps, but the Guard most certainly did, and a certain feeling of regret that they had not been engaged undoubtedly was felt throughout this body." Now, if this be the case, here, as he points out, is a glimpse of the reason which led to the premature judgment "that the enemy had been sufficiently shaken to risk an attack across the open and gently ascending ground."² In other words, the Guard wanted to be in the fight, and into it they went with a gallantry and pluck which is beyond all praise. But was it strict discipline? Ought a Commander to be at all led, even by such a laudable motive, when the time is not ripe for action?

Of course he cannot, and must not be a mere machine to abide strictly and undeviatingly by the letter of his instructions if the circumstances change, but in this case they had not changed.

In a lecture recently delivered by an Officer who is familiar with every minutest event of the Campaign of 1870, this point is very trenchantly dealt with when he says that steps must be taken to prevent such events as the Guard entering the battle of Gravelotte without orders.³ Here is one of the lessons which the incident is quoted to illustrate—discipline is needed to keep a Commander from such enterprises as these, for however much we may glow with admiration at their gallantry, yet unnecessary loss of life is not for the good of the army nor of the country.

On the other hand, we can learn yet a further lesson; where would the Guard have been on that day unless the men, the rank and file, had been perfectly disciplined?

Launched up that gently sloping ascent between St. Marie aux Chênes and St. Privat, exposed in a close formation to the unceasing hail of bullets, unable for some time to produce any effect with their own weapons at the range at which they were, what kept them there at all, but discipline?

The cemetery on the top of the hill tells the story of this attack only too plainly; decimated though they were, yet the battalions held on, till after long waiting they could advance again, this time to be victorious, but at what cost! In short, the incident shows us plainly how necessary a rigid discipline is on the part of Commanders, so as not to allow them to risk their men unnecessarily, and on the part of all subordinates, so that they may cheerfully and steadily obey, in whatever position their Commander may have placed them.

¹ "Précis of Modern Tactics," Home, p. 76.

² Duke of Wurtemberg, quoted by Colonel Home: "Précis of Modern Tactics," p. 75.

³ Lecture delivered at Aldershot, 1888, Colonel Lonsdale Hale.

Fire Discipline.

We come now to a point to be dealt with which is one of the utmost importance, namely, Fire Discipline. It is important to consider this, not only because on the field of battle it is of such overwhelming moment, but also it is one which, unlike most of the other points which go to make up discipline, cannot well be perfected in peacetime, though no doubt a sound foundation can and ought to be laid, on which it will be safe to build in actual war; but since the result cannot be thoroughly and fairly judged, save by experience, we can never feel quite sure till we have tried, whether we have actually attained the object we wish for, so it is well to keep the problem constantly before our minds. Forewarned is forearmed, and if we are prepared for a difficulty which is almost certain to arise, we shall be the better prepared to meet it when it actually comes.

It must not, however, be forgotten that reasoning of this kind is very apt to degenerate into mere theorizing, which, as has been said, will, unless mingled with and tested by practice, produce no good result, so the only plan open to us is to consider what has been done by our own and other armies in this matter on the field, and to see how far it has been attended with satisfactory results.

This question of controlling fire on the battle-field is a most difficult one, a fact which is plainly enough shown, even by the experience of an ordinary field day. It is by no means easy to control fire, even when no bullets are flying about, and the difficulty is augmented a thousandfold when pretence has given way to reality, and when the careful husbanding of necessarily limited supplies of ammunition is a matter of vital importance.

As far as artillery are concerned, this question fortunately can from the nature of the case hardly arise. Even with breech-loading guns the time taken between each round is necessarily long enough to enable the Officers in charge of divisions to keep the fire well in hand, and also the longer ranges at which artillery will, as a rule, fight, makes the task of fire discipline comparatively easy. Even when, in the later stage of the action, artillery is pushed further on, still the nature of the arm is a salutary check, and also at that time extreme accuracy of fire is not so imperatively necessary; a case shot cannot well miss everything and everybody.

The question then is one which mainly concerns the infantry, and with this arm it enters intimately into their action at every period of the fight, from the longest to the shortest ranges.

Here we are met by a difficulty at the very outset; it is simply a truism to say that it is no good to teach men in peace to follow out a course of action which must be abandoned on the battle-field, such a proceeding at once does away with all idea of maintaining discipline by the formation of right habits, which will be followed out almost unthinkingly, and it is open to question whether we shall not place ourselves in some such predicament as this if we try to push too far the practice of volley-firing in peace manœuvres, without thoroughly

recognizing the circumstances of a modern battle, where after a time volley-firing will become almost if not quite an impossibility.

Of course, this method of firing is in the abstract the best and most obvious way of controlling fire, but the question is how far shall we be able to carry it out in practice?

The Campaign of 1866 tells us little on this head, for the enormous superiority of the Prussian breech-loader over the muzzle-loader of their opponents established for the former such an advantage from the outset that they were but little troubled by considerations of fire discipline. In the Franco-German War, however, the case was different, both armies had a breech-loading weapon, and this is what we learn from that campaign: "Neither French nor Germans ever succeeded in bringing troops in close order into the front line . . . or in pushing battalions or companies forward to fire volleys."¹ Again, "the Prussians also found it impossible to make the least use of company or section volleys when engaged with infantry."² This is easily enough understood if the course of some typical action of the war, such as that of Woerth or Gravelotte, be taken, and closely studied. In the former, the battalions launched to the attack became gradually dissolved as they crossed the Sauer, and pushed across the low ground to the foot of the opposite hills, and there was indeed little opportunity for volley firing; battalions and companies were mixed up, little knots and groups pressed forward as they could, and no pause was practicable for a volley, even if an Officer could have made his voice heard above the din, to give the necessary orders.

In the latter action, there could have been but little chance for firing volleys among the throng of companies of different battalions and regiments which pressed round the farm of St. Hubert, or among the masses of troops which joined in the final assault on St. Privat at the other extremity of the line.

If only volleys could be fired at all times, no doubt they would be most effective, and it would be a practical method of solving, at any rate in part, the question of fire discipline, but French and German experience seems to say that they cannot be so fired, and if this be the case, it is no good to accustom men in peace to what they will never see in war, and we had better teach them when and how far volleys are practicable, recognizing that there will come a time when other fire must be used.

The increased range of the rifle has made fire practicable at long ranges, and the more highly trained the men are in shooting, the more use can be made of this increased power of the arm, so at these stages volleys can be employed, and with well-disciplined troops will be most useful, but it is not at this stage that the real difficulty of fire discipline has begun. Even here it is very doubtful whether anything on a larger scale than a half-company volley can be attempted, but later on when the opposing troops have pushed closer to one another, and the action begins to wax warm, then it is that

¹ "Tactical Deductions," Boguslawski, p. 79.

² *Ibid.*

the real difficulty begins, for the control of the fire will pass into the hands of the sectional commanders, and these are the men above all others, the subalterns, sergeants, and corporals, upon whom the question of fire discipline must be urged, and whom we must hammer away at till it has become a second nature to them to think of it.

In a book lately written, it is said with reference to a remark of General Skoboleff's that he could not urge too strongly on Commanders to have the fire of their men under control, that this is to be done by so "regularly, consistently, and persistently putting the soldier through the action of firing by orders that it shall be a second nature to him to fire his rifle only under control of his superior, and not otherwise;"¹ now, if this can be achieved the problem is solved, but the principle must not be pushed too far, so that the man will always wait for an order before firing, for this will not work in practice. It is all-important that the superior should thoroughly recognize his duty of controlling fire, but it will never do to lead the men to think that there will always be this superior to look to, in short much must be left to the man himself, and it is in fitting him for this necessary contingency that the control exercised by the superior should be directed. The above-quoted author says in another place, "the voice counts for nothing during the greater part of the struggle,"² and if this be true, as it undoubtedly is, it is no good teaching men always to look for orders, for in the din of battle they will not hear them when given, even if there be a superior on the spot to give them.

"When firing once begins men get easily out of hand, unless restrained by an iron discipline," says Prince Kraft.³ This is what is needed—this iron discipline, but surely this does not consist in merely obeying orders, in merely firing because the superior Officers order a man to fire; surely it is something far more deep-reaching, far harder to acquire, and Prince Kraft partly explains this in these words: "Not that formal obedience which consists in merely doing what you are told, and in awaiting orders, but that active obedience which leads a man to discover and anticipate the wishes of his superior."

This question more than any other is now engaging the attention of soldiers, and it is pretty generally admitted on all sides that the army which has the best fire discipline will be the victorious army of the future. The experience of the Germans in 1870 amply showed the necessity of fire discipline, and with their accustomed steady perseverance, and energetic use of the opportunity afforded by peace, they have diligently set this problem before themselves, and will no doubt effect a practical solution of this, as they have of so many other difficulties of military training.

If we would not be left behind in the race, we must with equal perseverance set about the same task, and there is plenty of evidence that we fully realize this fact.

For many years, we have seen old drill formations retained and

¹ "Common Sense on Parade," Colonel Macdonald, p. 118.

² *Ibid.*, p. 117.

³ *Ibid.*, p. 119.

steadily practised till they were performed with a mechanical precision; day by day, drill season after drill season, these time-honoured exercises have been gone through, the reason for them being stated to be that by such means the men were trained in habits of discipline. This was very true so far as it went, but it did not go far enough. Time was when this training was sufficient, but by degrees it has dawned on the minds of everyone that times are changing, and we must change too, that visions of shock tactics were getting dim and faint, and visions of fire tactics becoming clear and distinct and with them fire discipline.

We have certainly been loth to abandon our traditions, we have certainly not with rash haste hurried after any new thing, but the years of thought and experience have now borne fruit, and we stand in the dawn of another day.

We, like the Germans, have struck the pen through a multitude of manœuvres in the drill-book, some of which we were not long ago emphatically told "were as obsolete as the cross-bow," and we stand face to face with a new condition of things.

It has been suggested that a simplification of drill will shorten the necessary period of service, but this is far from being the case; the training of the soldier will take just as long as before, for the end to be gained is one harder of attainment, and the means adopted must be even more energetic. "Drill," as has recently been said, "is to be simplified to gain more time and opportunity for thorough individual training, and for more uniform and strict training of the men in fire discipline and the discipline of the combat, and this in future will be from a tactical point of view the test of a well-disciplined regiment."²

A German Officer lately lecturing at Berlin, after having had opportunities of seeing the working of British troops, said that in the English Army, when the attack commences, "all the outward germs of discipline are lost"³—now, if this be true, and most soldiers will in a greater or less degree admit the truth, it behoves us to consider the matter very seriously, as it will be universally allowed that we need to have both the spirit and the form, or to put it in another way, we can never in the field get the form unless it is dictated by the spirit.

It is impossible as has before been pointed out to lay down hard and fast rules, for there is no hard and fast standard by which rules can be adjusted, but as the matter is still, so to speak, *sub judice*, ideas concerning it must of necessity be in a great degree crude and tentative; it does seem, however, that what is wanted is to begin at the very root, and to employ the time allotted to training in impressing upon every single man, but above all upon Officers and non-commissioned officers, the value of fire, the way in which this value is multiplied tenfold by a cool and thinking use of it, and the importance of not just letting off a rifle, but of shooting so as to hit and to kill.

¹ Speech by Lord Wolseley.

² Lecture at Aldershot, 1888, Colonel Lonsdale Hale.

³ *Ibid.*

An Officer of experience has said that when once a man has found himself short of ammunition in a battle, he will take good care that it does not happen again; this is no doubt true, but we cannot run the risk of such a precarious way of teaching as this, a lesson so learnt is very likely to be the last as well as the first, so what we have got to do is to impress this point upon the men in peace.

Our musketry regulations are getting more and more practical, and it is to be hoped that they will yet go in the same direction, and that we shall one and all learn to take the same care of the men's shooting, either with ball or blank, which we have been heretofore accustomed to take with their dressing in line; thus by degrees we may hope to arrive at an improved fire discipline.

We have shaken ourselves free from the idea that shoulder-to-shoulder formations are essential for compactness and steadiness, a more extended order is that to which we have now turned our attention, and this practically means simply dealing with the unit—the individual soldier—instead of with the mass, the battalion or the company in close order. This is the principle which has to be applied to firing in order to obtain fire discipline, and necessary as the latter is now, the necessity will be even greater when men are armed with a magazine rifle.

Every Captain of a company must pay more and more attention to each individual man of his company; on parade, at the musketry range, and in the lecture-room, he must impress upon every man, and urge upon his subalterns and non-commissioned officers, this question of fire discipline. There are still some in the Service who look shyly upon the idea of a lecture-room, and declaim against theoretical soldiering; some small show of reason they certainly have, for soldiering is not and cannot be theoretical, it is eminently practical; but surely the vision of a lecture-room need not raise this bugbear of theory. A great surgeon is no theorist because he has spent hours in listening to lectures to learn the rudiments of his profession before he attempts to practise, a barrister is no theorist because he has spent perhaps years in studying intricate points of law before his voice is ever heard in a court of justice, and why should a soldier be a theorist because he has himself tried to grapple with, and to put clearly before others the many intricate problems which the profession of arms involves?

We still seem to have some lingering notion that a soldier, like a poet, is born and not made, but, as a matter of fact, probably for every one born soldier a thousand are made, and made by a persistent and lengthy process; the knowledge of war does not come by nature, it must be learned like everything else, and we want to realize that point. "Will, study, and perseverance," said Napoleon, "have made me what I am."

Our courses of military training have done much, but they might and they must do much more. If we take a book which someone else has compiled—a sort of patent military food, and oh, that well-meaning people would not write these books, which serve as crutches to the lame and a saving of trouble to the indolent!—and read it out

for half an hour to our men, because we have got to spend a certain amount of time each day, and a lecture must appear in the day's routine, what good does that do to anyone? If we are bored ourselves—and how can we be otherwise?—we shall certainly bore our audience, and for all the practical good we shall effect we might just as well not go through the pretence of the thing. It is not given to everyone to be a brilliant lecturer, nor is it needed in an Officer, but it is given to everyone who takes an interest in his profession to put in a concise and clear form to those under him some of the many points which all must grasp. An intelligent bricklayer will give a pretty clear if not strictly grammatical explanation of how he builds a wall, and why should we be behindhand and not be able, or, what is more probable, think that we are not able, to give a little clear explanation of the military art to our men?

If our trainings are used aright they may be a powerful aid in the acquirement of fire discipline, and the lecture-room will have a good deal to do with it.

Practically then let each Captain try to realize the problem himself, and to impress it upon his men, "constant dropping wears away the stone," and we shall not get what we want by a miracle or by any sudden inspiration on the part of ourselves or of our men, it will only be by a constant endeavour to implant the fact that a good soldier must have a cool head, a steady hand, and a deliberate aim at some special object. The real gravity of the situation, too, should be laid before the men; it is a serious thing to go with your life in your hand to meet probable death with a cheerful face and a stout heart, but they will not find it any the easier because they have not realized the situation till they are actually face to face with it, so it is just as well to put it plainly before them that there is difficulty, and there is danger, but that the spirit of duty, that is discipline, has to be raised and strengthened that the difficulty may be faced, the danger braved, and the object gained.

This has recently been clearly put in a lecture at Aldershot;¹ as an example, the case of two sons was taken who were going to fight their way in a distant Colony, and it was asked which of the two has the most chance of success, the one who has had put before him all the difficulties he is likely to encounter, or the other who goes out in ignorance and has to pick up his experience as he goes along? Surely the former has the better chance, he is better disciplined as we say, and it rests with every Officer to put his men in the position of one or the other of these imaginary colonists. Should there be a moment's hesitation as to which course we should adopt?

Now to apply what has been said to the case of the actual attack with a view to obtaining the necessary fire discipline. It must be presumed that no regiment will take the field without having undergone some such system of personal and individual instruction as has been indicated above, and there is one leading feature which must not be lost sight of, namely, that the Commander of a battalion can-

¹ Colonel Lonsdale Hale.

not be everywhere and do everything, he has his own proper sphere of action, and he cannot take the place of his Majors, Captains, and subalterns. It is no good his attempting to do so, and such an attempt will only lead to confusion; he must be content to let each individual Officer carry out his individual part of the battle.

We read that "after the storming of the Peiwar Kotal, the Officer commanding a regiment which took part in the flank attack stated that during a hard fight of several hours' duration he had never seen his regiment. In fact from the time he first launched it at the enemy until he rallied it again upon the position it had won, the whole conduct of the fight devolved upon the company Officers."¹ If then fire discipline is to be obtained it must be the company Officers who achieve this end.

Of late years, with improved and improving firearms, the different stages of a battle are not at all what they were, the effect of fire begins at a much greater range than formerly, and this is so far in our favour. In this early stage fire discipline may be rigid, for the men are still kept together, the noise is not too deafening, and the excitement of battle has not yet reached fever heat, so volleys are admissible, possible, and effective. Even here though these volleys will at most be only company or half company volleys, so at this stage the fight is beginning to be worked out by the company Officers. Then as the advance progresses, as bullets fall thick and fast, and many a gap appears in the ranks, excitement increases, the men want to fire rapidly, no matter whether they can see anything definite to fire at or not, and at once the Officers have a harder task, but still a good deal of control can be exercised if the Officers and men are accustomed to one another, and the tendency to fire wild must and can be checked. This will be all the easier if each man has had thoroughly impressed upon him that every shot which does not disable an enemy is not only wasted but actually adds to the risk of the man firing, by depriving him of ammunition which he will stand in urgent need of later on.

Then comes the other stage when the action is at its hottest, when the opposing troops are well in view, and then is the hardest task of all, a task, too, which will fall in a great measure on sectional leaders, and whenever an Officer or non-commissioned officer can then gather a group near him which can see him and look to him for guidance, he will exercise a very important influence on the fight; he may not be able to get a volley fired, but if he and the men have been well trained he will be able to exercise a salutary check upon their firing, and prevent waste of ammunition with its attendant risks. He will be able to ensure fire being delivered when and where it will be effective, in fact if each sectional leader will keep his head and use it he can do much in the way of control, and probably this is all he can be expected to do.

Experience hitherto does *not* tend to show that at this stage a Captain will be able to gather together a company or even a half company for a united volley.

¹ "Lectures on Tactics," Hart-Dyke.

To sum up, fire discipline means decentralization of authority, no superior can properly control more than four to eight subordinates, so let this be recognized and carried out through everything, and let each superior be allowed the control of this limited number; in all peace manœuvres let this be the regular mode of progression, and so in war we shall be all the more prepared for what will be the existing conditions. Let every man have his own task, and see that he does it in peace, for often in battle it must be left entirely to him to do it without any one else to lean upon.

Each rank has quite enough to do if it does what is required of it, and the Commander cannot do the Captain's work, nor the Captain the subalterns', and so on to the last link in the chain. Decentralize authority, educate individuals in peace with the greatest care that they may know their duty, and in action let them do it.

Giving of Orders.

The next point to be considered is discipline mainly from an administrative point of view. Although, of course, the object of all discipline is tactical efficiency, yet the various parts of the machinery employed in training troops in peace, which are not immediately and directly connected with their tactical handling in the field, can be included under this general heading of discipline for administrative purposes. Here, as first in importance, as well as underlying very nearly every aspect of the subject, will be first considered the giving of orders.

Now if we want to get discipline, the relation between giving an order and the carrying out of that order should be so close that practically they are one and the same thing. A superior must not be disobeyed, immediate and cheerful compliance is essential, and an Officer's duty does not end with giving an order; as one who is responsible for the proper training of his men he must go a step further, and see that the order is complied with. This rests entirely with the Officer himself; the manner in which he gives his order has a very great deal to do with the way in which he will be obeyed. In the English Army, at any rate, it is hardly necessary to urge upon Officers the duty of courtesy towards the men, for it is to be found in a marked degree. The private soldier of to-day is treated by his superior in the Army with a good deal more courtesy and consideration than he would be by his superior in the classes from which he is drawn, but though unnecessary to urge it upon Officers it is very important that we should see that this principle is not forgotten by non-commissioned officers. The latter will do an incalculable harm if they have what we call a bad manner with the men. This may spring partly from ignorance and partly from natural disposition, but whatever be the cause, it is very much to the interest of a Captain of a company to find out by observation how his non-commissioned officers treat the men, and to quickly repress any rough and discourteous treatment.

In a book written some years ago by a colour-sergeant there are some remarks on this subject, which are so much to the point that

they are quoted *in extenso*.¹ "Take every man for what he is worth. Notice the nature and habits of each individual, and treat him so far as *civility* and *courtesy* are concerned as an equal until he proves himself unworthy of such consideration. The sergeant who treats a man with even a shade of disrespect or disdain merely because he happens to be a private soldier or inferior in rank to himself is not only devoid of ordinary common-sense and manliness but a disgrace to the cloth he wears. It is quite time enough to advertise stripes and position when your authority is questioned. Manly pride is a credit to any soldier, but a domineering promenade of rank is only a display of ignorance and imbecility." Officers are fortunate if they get sergeants and corporals who will actually carry out in their dealings with the men principles such as these; the discipline of a company or of a battalion becomes tenfold easier, and a feeling of comfort pervades all ranks. But to attain this they must treat non-commissioned officers in the same way, for the behaviour of the latter to the men is a reflex of the behaviour of the Officers to themselves, only with any mistakes exaggerated, and for the object we want, namely a prompt obedience to orders, mutual respect is necessary.

The Army, of course, contains within its ranks a number of very different natures, and there are many Officers who seem to be able to get what they want done by the men with very little difficulty, while others, though they have the interests of their men really at heart, have plenty of zeal for the Service, and are conscientiously trying to do their duty, yet never seem quite to succeed in establishing what the Duke of Wellington spoke of as "the mutual confidence between Officers and men." With every wish to maintain a strict but not a harsh discipline, they somehow cannot quite manage it, and the force of circumstances drives them into difficult situations, whence they cannot well escape without seeming harshness or undue laxity. We are inclined to think that the quality of being able to deal with men is a natural gift, and we envy the possessors, but while no doubt it is in part natural surely it is not altogether so, it is the result of a variety of mental processes, but there is a good deal which may be learnt if we will only take the trouble to "think and reason right" about it, and see how far natural deficiencies can be made up for by training and disciplining ourselves before we try to discipline others.

It is like a question of horsemanship; the best rider is the one who always has his attention on the alert, and keeps a light but firm hand on the bridle, not one who lets his reins hang loose, and from time to time recalls his horse's attention to the fact that he is in the saddle by a jerk at the curb; the former will get far more out of his horse and take far less out of himself than the latter.

So it is in dealing with men, it is the firm and steady hand which helps discipline; and if an Officer has not got this quality by nature, he will have in the ordinary course of his profession every opportunity of acquiring it, if he wishes to do so. Natural indolence, natural irritability or impatience can be overcome, and unless an Officer does

¹ "Colour-Sergeant's Pocket Book."

succeed in overcoming these things he will never get his orders obeyed in an emergency.

Command is just as much a duty as obedience, and it has been well said that the faculty for so giving an order as to leave the impression that it is as much the duty of him who gives the order to give it as of him who receives it to obey it, is a most valuable one to cultivate.¹ Firstly, then, in giving an order he who gives it must be convinced that it is his duty to do so; unnecessary worrying orders are fatal to discipline, men get fretted by little trivialities being made into matters of importance, and, of course, however trivial the order of a superior may seem to be, it must be obeyed, so all the machinery must be set in motion to obtain perhaps a most insignificant end, and one which some other order quickly following will altogether upset.

An order should be indisputably necessary, and bearing this in mind, it is most important, in the interests of discipline, that it should be well thought out beforehand.

Next it should be very definite. According to Van Hardegg, "an order is short when it does not contain one word too much, complete when there is not a syllable wanting:"² prolixity is above everything to be avoided, it creates a confused impression on the mind of the recipient, and where we want right action to follow right reasoning the idea conveyed to the mind of one who receives an order must be a clear impression of the idea in the mind of the superior who gives it. If, however, the latter, either from an existing indefiniteness in his own mind, or simply from too many words, has clouded his idea, and given forth an uncertain sound, the result will be a wrong or an imperfect one. Then, when given, it must be actually carried out, and he who gives it must take steps to see that this is done, or again a feeling of uncertainty is created which will rapidly grow to alarming dimensions.

There is another point of importance, and that is that everyone who gives an order should thoroughly realize in his own mind what will be the result ensuing from it. Sometimes orders are given which in themselves are perfectly legitimate and right, but which cause an inconceivable amount of friction and discontent because they are either given at the wrong time, or they are of a nature to thoroughly upset a number of collateral things, of which probably the Officer who gave the order had not the slightest idea.

This fact leads to a vital principle in the matter of getting orders obeyed, namely, that every Officer should *thoroughly* know his work, and every little detail, however minute, of the ordinary regimental routine, so that everyone in his own rank may endeavour to avoid those unnecessary frictions which militate against discipline.

Of course, routine is not to be treated as a fetich and blindly worshipped; but when once an established routine has been laid down, and found to be the best from all points of view, a vast amount of worry is saved if this routine be respected by all, and unnecessary

¹ Lecture on the "Connection between the Ordinary Work of Soldiers in Peacetime and Warlike Efficiency," Maurice.

² Lectures on "Staff Duties," Clarke, p. 37.

fidgitting interferences with it, avoided. The men and the non-commissioned officers all feel rubbed up the wrong way, and the military machine goes awry, while a little thought and consideration as to the result of the giving of some particular order would have prevented this, and discipline instead of being weakened would be strengthened.

Fussiness, too, is death to discipline; however well meant, it is fatal in its results. Soldiers are not children, and they get irritated by fussiness, even if the object be their own comfort and advantage, and definiteness of purpose will go a long way with them.

If an Officer knows what he wants, knows that it is right, and that it is his duty to get it done, and clearly and definitely with full confidence in himself expresses his order, in nine cases out of ten it will be obeyed, and in the tenth the remedy is at hand: if, however, he is indefinite, does not feel quite certain of himself or of his own ground, and delivers his orders in a hesitating, confused, or even semi-apologetic way, in nine cases out of ten they will not be obeyed, and for this disobedience he is just as much to blame as anyone else.

To sum up then: the preservation of discipline demands the following conditions in giving orders:

- a. That the order should be a necessary one, and given as a matter of duty.
- β. That it should be well thought out, and the result of its being carried into effect should be thoroughly realized.
- γ. That it should be clear and definite.
- δ. That steps should be taken to have the order actually carried out.
- ε. That all fussiness should be avoided.

Punishment.

The question of punishments is a necessary, though a disagreeable feature in any system of discipline; human nature being what it is, strict and clearly defined regulations on this head are an essential part of military life. The rules laid down for our guidance are the result of much thought and practical experience, and few will question the wisdom of by far the larger part of them, but the difficulty comes in the details of carrying them out, in which so much depends upon the tact, temper, and experience of individuals in authority.

The principle upon which punishment should be awarded is most clearly expressed in the Official Manual of Military Law,¹ "discipline enforced by punishment alone is a poor sort of discipline which would not stand any severe strain. What must be aimed at is that high state of discipline which springs from a military system administered with impartiality and judgment, so as to induce in all ranks a feeling of duty, and the assurance that while no offence will be passed over, no offender will be unjustly dealt with." This expresses the three main points to be observed and the object to be gained, namely, impartiality, judgment, and an unbroken sequence between cause and effect tending to produce in all ranks a feeling of duty.

¹ "Manual of Military Law," chap. V, Art. 85.

Of these, the due relation between cause and effect, the certainty that punishment will follow crime, is perhaps the one most to be borne in mind. The regulations of the Service do not in ordinary cases permit any very great deviation likely to cause partiality or want of judgment, but a lax state of discipline may often allow many grave offences to be committed, which go altogether unpunished, simply because the Commanding Officer is not aware of them till the evil has spread, and reached such a pitch that it breaks out in some glaring way, and a severe example has to be made. If a proper idea of duty be absent in the various ranks, they are led to shut their eyes to a state of things which is utterly and radically bad, and so for a time they go on in a sort of false security, till inevitably the crash comes.

Now there is nothing which tends more to preserve discipline than the knowledge among the men that they will not escape the consequences of their acts, that there will be no weak "letting off" on the part of non-commissioned officers and Officers, but that so surely as they break the rules laid down for them, they will have to appear in the orderly room and take their punishment. Of course there are cases where men will deliberately go and commit some military crime with the full knowledge that they will have to take the consequences, and with no attempt at concealment, they simply do as they choose and then brazen it out, but these are not the ordinary cases, and when once a man understands that there is no element of chance about the matter, but that punishment follows crime as a matter of course, he will be a good deal more careful how he conducts himself. Very few people, Officers or others, take any pleasure in dealing out punishment, and young Officers, especially, are inclined to obey the natural promptings of perhaps an easy-going disposition, and to let men off, but this really is the greatest possible mistake, it is not a high sense of duty and is no real kindness, and the sooner every Officer realizes that the question is not one of individual inclination but just simply a matter of duty, that it is just as much an Officer's duty to take steps to have men who break military rules punished, as it is the duty of the offender to have obeyed those rules, the better it will be for them and for their men, and the more a right and sound discipline will flourish.

This does not apply to first offences; in all cases let the existing regulations be loyally and faithfully carried out; let mild reproof and admonition be tried as is laid down, but when these are found useless, and punishment has to be resorted to, let there be no weak holding back, but mindful of the great responsibility which rests upon him, let every Officer, however young he may be and however short his service, follow the regulations, and do his duty.

For young Officers this is often very hard, and by a good many mistakes they gradually learn how to carry out their duties in this matter: the offender is often, in more senses than one, a much older soldier than his superior, and he tries to see how far he can go. Some mistakes will inevitably be made, but it is just as well to bear in mind that while these mistakes are being made, which perhaps no one

ever hears of, or knows, save by their results, the cause of discipline is decidedly suffering. Commanding Officers, Captains of companies, senior Subalterns, and, above all the Adjutant, may and should do very much to help young Officers in this, by putting before them that the military system is one which allows of no display of individual feeling in this matter, but that duty requires a very rigid compliance with rules, for the machinery of discipline must be like Nature herself, and allow no deviation from her laws without an inevitable consequence of punishment.

In another sense, too, it must be like Nature, there must be some logical proportion between the breaking of the law and the consequent penalties, and these penalties must be in all main features the same under similar circumstances. It is very difficult for any man to render himself in a magisterial capacity at all times a perfectly cool and unbiassed administrator of the law, swayed by no personal feeling—feeling not necessarily for or against the offender, but simply the result of the state of mind and body he may be in at the time—but if a Commanding Officer or any Officer wishes to be a good disciplinarian, he must, as far as is possible, train himself to this state. When men begin to see that similar offences meet on different occasions with unequal punishments, at once they know that the element of chance has been brought in, it may be their fortune to come in for a light sentence, or their ill-luck to come in for a heavy one, and as has been said before, this element of chance is one which is very hurtful to discipline. It is far better that a man should know positively that he will undergo a punishment of severity proportionate to his offence than that he should feel uncertain whether he will, on the one hand, be very severely dealt with, or on the other, get off very lightly, and this feeling of certainty will promote discipline as much as the opposite feeling injures it.

There is in the Navy a regular authorized scale of punishment, which is obligatory on all Officers: the punishments laid down are quite sufficiently severe to meet all ordinary cases, and by this scale a uniformity of practice is obtained, which is beneficial. In the Army, although the quality of the punishment is laid down clearly, yet there is room for a considerable amount of uncertainty as to the quantity which may be awarded, and different Commanding Officers take very different views of military offences, or even take different views at different times. Of course the objection to too much fettering of the liberty of action of an Officer is obvious, namely, that men are not machines, and that they must be dealt with according to their various dispositions. This is, no doubt, true, but the military system aims at producing a sort of mechanical form; and further, if all Officers were perfect in tact, temper, judgment, and knowledge of their men, too much latitude could not well be allowed them in fitting their punishments to the nature and disposition of the offender, for they must necessarily be the best judges of what is needed. But unfortunately, this is not, and never will be the case, so the question resolves itself into this, which conduces most to discipline—a feeling of uncertainty among the men as to how much punishment

they will get, or the positive certainty that within not very wide limits they are certain to get a definite well understood punishment, even though a tolerably severe one? It is submitted that the latter circumstances are those most likely to attain the desired end.

Something has been done in this way; in one corps certainly, and probably in many others, there exists a printed list of the various ordinary crimes with the punishments which should be allotted to them for the guidance of Captains of companies, and with the object of securing uniformity throughout the regiment. Such a plan seems to be an excellent one; it would be of the greatest assistance to Captains and Subalterns in command, and further, it would be of assistance to the men themselves, for they would know what to expect, and that they would not get off, while yet more it brings the immediate influence of the Commanding Officer, who sanctioned the rules, down to all ranks in all circumstances, increases the strength of the chain of responsibility, and strengthens discipline of the right kind, doing away with arbitrary punishment as well as with unwise leniency.

Defaulter Sheets.

It is a matter of common knowledge that in a large majority of cases the early period of a man's service does a good deal in the way of filling up his defaulter sheet. Coming fresh from civil life, and being plunged into an entirely new set of circumstances and conditions of life absolutely different from any to which he has been previously accustomed, before he has accommodated himself to the requirements of military discipline, he is very likely to have committed sundry breaches of rules which necessarily have had to take their place in the defaulter sheet, and so he begins by accumulating a black record against himself. When he has become more imbued with the spirit of his military career, unless he is either naturally of a bad character, or has been discouraged by the start he has made, he begins to respect rules and to respect himself, and his offences will diminish in number.

Now would it not be advisable in the interests of discipline to bear this in mind, and not to expect from the young recruit the same matured qualities of a soldier which are demanded from men who have been longer in the Service? It is very discouraging for a young soldier when he first begins to really feel what the requirements of discipline are, and to wish to accommodate his life to them and to become a steady soldier, to find that he has already got a list of offences against him which can never be blotted out. Would it not be practicable, for the first six months at any rate of his career, to keep only a temporary defaulter sheet for him, and at the end of that period for the Commanding Officer to consider all the circumstances of the recruit's service and at his discretion either to destroy the sheet, or direct that certain offences only should be transferred to the sheet which will commence to be kept as a permanent record, or in the case of a man whom he sees to be of really bad character, and whose offences have not arisen either from thoughtlessness or ignor-

ance, to let the whole document stand and continue it as a permanent record as at present?

If some such plan as this could be adopted, a well disposed man would have an opportunity of starting afresh at a time when he pretty well understands what military discipline requires of him, while a man of obviously bad character is in just the same position in which he is under the present system.

In cases where the recruit has passed the first six months of his service at the Regimental Dépôt this discretionary power of the Commanding Officer might well be exercised before he is sent to join the service companies. It is true that at this period often his time of greatest temptation begins, but at any rate if he has been six months in the Service he has learnt something about discipline, so if he is good for anything he can look after himself, and this suggestion is by no means intended to prop up the weak-minded, or to underestimate the seriousness of breaches of discipline, but simply to give every man a fair chance of becoming a good and successful soldier.

Imprisonment.

It has been said that the worst use to which a man can be put is to hang him; this may be extended with regard to a soldier to the question of imprisonment, considering him as an individual supported by the State for the performance of certain definite duties, and trained for those duties at a considerable amount of trouble and expense, it is probably about the worst use we can put him to, to imprison him. As long as he is in prison he is an unproductive factor in the Army, he is doing no good, and is still costing money to the country, and when he comes out, there is every prospect of his being a worse soldier than when he went in. Unfortunately, imprisonment is in many cases a necessity, but if the principle is recognized, as it is decidedly being recognized now, that it is a makeshift sort of expedient at the best, it will be well in the interests of discipline, as well as in those of economy, to minimize imprisonment as much as possible.

There is at the present day in the Army a strong feeling on this point, and recent orders and regulations have tended not only to lessen terms of imprisonment, but also, when such punishment cannot be avoided, to keep it as much as possible in the hands of the military authorities. Discipline will not suffer from these regulations, on the contrary it will gain. There is much in military life which is called crime, and from a military point of view is crime, which in civilian life is not crime at all, and it does not seem wise or right that men who have been found guilty of military crime, disgraceful only from its military aspect, should have to pass long months in a public prison, even under all the regulations which may be in force to prevent their being classed in the same category as civilian criminals who have committed some gross breach of the law of the land.

In the class from which soldiers are drawn the stigma of going to gaol is a very deep and real one, and it is a class which is not prone

to appreciate subtle points of reasoning as to the cause for which the imprisonment is awarded, or the nature of the crime which has brought about this punishment. Going to prison simply means to them just what the words convey; they feel the disgrace of it very keenly, and when a soldier comes out of gaol he feels himself lowered in the eyes of society, so that it is difficult for him to make a fresh start, and right himself in the opinion of his world.

In a public gaol, too, he contracts habits and ways of thinking which are in the highest degree inimical to what we wish a soldier to be, and unless very carefully handled on his return to his regiment, he is likely to be a useless soldier, a trouble to his Officers, and a bad influence in his company.

From every point of view, long terms of imprisonment are not likely to do much good; if they are intended to impress upon the offender the sense of his wrong-doing, a shorter term will effect this equally well, and certainly it is not for the good of the State that a soldier should be kept eating the bread of idleness for a longer period than can be avoided, even if the bread be only prison fare. In cases where the gravity of the crime makes a long sentence necessary, it is better in the interests of discipline that it should be coupled with discharge, for the soldier, unless a very exceptional sort of man, is not likely to be of much good afterwards.

If, however, imprisonment can be kept more within the hands of the military authorities many of the objections to it are cancelled. There is not such a marked break in the soldier's career, he does not so completely exchange military discipline for gaol discipline and the moral stigma is not so great. If it be argued that this stigma is a part and an effective part of the punishment, it is submitted in answer that for very many military offences there need be no such moral stigma, and if such be attached to the punishment, the latter overshoots the mark, and is more *severe* than need be the case. It is surely sufficient that a man should feel that having broken the military code he has suffered the military consequences, without feeling that he has also incurred a civil degradation. Of course, for all offences which are disgraceful not only in the eyes of military law but also in the eyes of common law, such as theft, and other offences of a fraudulent kind, or in themselves of a nature which all right-thinking minds would class as disgraceful, these remarks are not intended to apply; if a soldier commits such crimes as these, it is right and just that he should pay the same penalty which he would have paid had he been a civilian, or one even heavier, inasmuch as he has chosen to disgrace a highly honourable profession. They are only intended to be applicable to offences of a purely military nature, and the point sought to be conveyed is that for such offences as these it is desirable in the interests of discipline, and of the well-being of the Army, to keep the whole machinery of awarding and of carrying out the punishment as much as possible in the hands of the military authorities, and to let the imprisonment be undergone in a military prison. Recent regulations have done much to lessen terms of imprisonment in many cases, and might they not be still further

extended to enable the military machinery to deal with sentences for all ordinary offences throughout?

Discharge.

Discharge with ignominy, or discharge as worthless and incorrigible, are two powerful weapons in the hands of the authorities, but it is questionable whether as much advantage is drawn from them as might be the case if they were rather more freely used. If there is one thing more plain than another, and acknowledged on all sides, it is that all recent movements in military legislation have been made with the view of improving the condition of the soldier; we want to have better men under the colours than we had in the old time, and we are getting them. In the wide field, however, from which we draw our recruits, we get hold of some very doubtful characters, and they are nothing but a nuisance when we have got them, they keep up the crime average, both by their own acts and by the example they set to otherwise well-disposed men, and they are not worth keeping. Yet somehow or other, we are very long-suffering before we finally get rid of them, and in the meantime they are a plague spot. Is this because we are so put to it for men that we can't afford to lose these black sheep? Surely not! Recruiting is active, and in a flourishing condition, and we can get soldiers if we want them, whereas the existence of these bad characters in the ranks tends to give soldiering a bad name, and to stop decent recruits from enlisting.

The old prejudice against the Army which used to exist in country districts is dying out very fast, but it has not quite gone yet; it used to be thought by a family in the labouring classes that when one of their number had "gone for a soldier" he had indeed fallen low. This prejudice was the result of an idea, originating perhaps partly from experience but more from tradition, that the soldier generally was a very disreputable and shady class of person, but now fortunately people are improving in this respect; when they see their sons and brothers come back looking smart and neatly dressed, with a good conduct stripe on their arm, and a manly confident bearing, they begin to believe that the Army is not such a bad place after all, and these smart well-conducted lads are very useful recruiting agents in country places.

Now, if the thoroughly low and bad stamp of man be ruthlessly weeded out of the Army, the lads who go back to their homes on leave will be all the more inclined to attract others by their story of military life, and we shall gain both in the number and the quality of recruits; while if the public in general find that the village black-guard is not good enough, nor nearly good enough for a soldier, but that we will not keep him, their ideas about the Army, already, as has been said, improving, will improve still more. If we can reform the ne'er-do-weel—and we very often do, and make him a respectable member of society—all well and good, and the country gains a man, but why keep him to be a thorn in everybody's side, a useless mouth to feed, and an evil influence among his comrades?

The objection is often raised that by discharging a man the authorities simply do for him exactly what he would wish, that having found the Service is not such a good place for a worthless character as he fancied it would be, all he wants is to get out of it. This is true, but if we go to the real root of the matter it is doubtful whether this objection will prove quite a sound and reasonable one. The object we aim at is to get good and trustworthy soldiers, not to use the mechanism of the military machine in making life unpleasant to a bad character who steadily declines to be reformed; if the man is kept in the Service he learns certainly that rules cannot be broken with impunity, and in many cases he passes a large proportion of his time under punishment, but the question is, does the country and the Army gain anything by this? Public money is spent, but is there any adequate return for it; is the general good advanced by the unavailing attempt to make a soldier out of such very unpromising material; would it not be better, even at the risk of falling in with the wishes of the offender, to let him see plainly that the Army does not want him, and will not have him, and to send him about his business summarily? Any satisfaction which he may derive from this can be considerably minimized if he has brought himself into the position of a prisoner before a court-martial by a sharp and severe sentence of imprisonment followed by discharge.

If this measure were a little more freely used, everyone in a regiment would be saved a great deal of trouble, and the cause of discipline would certainly profit. The ranks of the Army can be filled with decent men who will make good soldiers; what therefore is the use of keeping those who simply go on from one crime to another, and are always being punished? Let them go, and the Service is well rid of them.

Importance of Punishment quickly following Offence.

There is another point which it is well worth while to pay strict attention to, and this is that punishment should very quickly follow the offence for which it is due. The regulations in force fully recognize and provide for this, and it only rests with Officers in this, as in most other matters, to follow out the regulations loyally, and to enter into the spirit of them. In all ordinary cases of military crime the circumstances are such that there is usually no difficulty whatever in at once "telling off" a prisoner; it is not often that delay is caused by waiting for evidence or anything of that kind, the administration of the law in the Service on any point therefore need not usually move with halting step. Yet somehow it occasionally does. Officers, in their anxiety to be perfectly fair and just, and to weigh the whole circumstances fully, fail sometimes to bring themselves up to the point of at once deciding and delivering their punishment. It is by no means intended to imply that disposing of prisoners is a sort of matter of routine, and can be just mechanically gone through, very far from it, the serious and responsible nature of the task and the evil consequences of a wrong decision are fully recognized, it is

only wished to convey that remanding prisoners where it can possibly be avoided is a very harmful thing, and tends to injure discipline. A man who goes back to the guard-room to wait for another twenty-four hours or more before his case is disposed of may be, and often is, doing a good deal of harm. If he be of a sour and ill-tempered disposition, this period of waiting will not improve his natural defects, and he will certainly exercise a bad influence on other men, who may come to be with him in the prisoners' room, more especially if the offence for which he is awaiting punishment is one of the nature of insubordination. It is unnecessary to do more than mention this point, for it is one almost too obvious to dwell upon, but it is touched upon here with the view of showing that not only in the interests of discipline should punishment *inevitably* follow crime, but that it should also follow it without delay.

Non-commissioned Officers.

This is perhaps one of the most difficult of all the problems which an Officer has to grapple with if he wants to get good discipline. Who is there who has not at some time or another found himself in the awkward dilemma of either disregarding a non-commissioned officer's story or punishing a man perhaps unjustly? To let a non-commissioned officer feel, and to let the men see, that he is not trusted is fatal to discipline, while to let any man have grounds for thinking that he is unfairly dealt with is equally fatal. If any Officer be in the position of having non-commissioned officers under him who are not perfectly trustworthy, he is likely often to find himself in a very uncomfortable predicament, which it will need all his tact and experience to come safely out of without prejudice to discipline. There is no royal road out of this difficulty, neither Officers nor non-commissioned officers can by any magic process be rendered immaculate specimens of perfect tact and temper and of unerring judgment, but a difficulty fairly looked at and understood, is in a fair way of being overcome by energy and determination.

The question is again simply one of training, a slow and gradual process, but like many other gradual processes, an effective one. To make a very young soldier a non-commissioned officer, however smart he may be, and however capable of repeating pages of the drill book, is simply to court complications of this kind. Before any man is allowed to wear a stripe he should be a proved man, and one who has thoroughly learnt the duty of disciplining himself, before he attempts to exercise any function of command over others. There are plenty of men who have nearly every good quality which a soldier should have—men whom everyone in the regiment would like to see in the non-commissioned ranks—but they have not got just that tact and temper which are needed, and, hard as it may seem, they should never be promoted, at any rate till they have remedied this defect, and this both in the interests of discipline and of themselves.

Again, there are men who make excellent non-commissioned officers in the barrack square, with all the machinery of discipline round

them, and a well-ordered routine to keep things going straight, but away on detachment duty, when they are thrown somewhat on their own resources, they prove dismal failures, and have no resources available when they are wanted. On detachment duty, a non-commissioned officer who has not properly learnt the lesson of discipline either for himself or for others, will go a long way towards making havoc of that of the detachment.

The evil is easy to see, the remedy is not so obvious, but it rests with Officers, the better disciplined they are in the highest sense of the word; the better discipline they will get in their subordinates. The Commanding Officer in selecting, and the Adjutant in training non-commissioned officers, have a serious duty, and the training should be real training, not merely a learning of drill, but a mental training as well, and here again the lecture-room is a valuable aid. Captains of companies can also do much. The German system urges upon company Officers an intimate knowledge of the nature and disposition of their subordinates; theoretically we too hold the same view, but do we carry it out entirely?

It is well worth a Captain's while to study his non-commissioned officers with a considerable amount of care, and to do his share in training them, not by worrying, fault-finding, and general fussiness, but by a persistent course of action, which lets it be felt without his expressing it in so many words that he sees everything, notes everything, and forgets nothing, that he trusts his subordinates, not rashly and without reason but from deliberate knowledge, that where he trusts he trusts fully, and that any betrayal of such trust will meet with severe and prompt measures.

In our Service we are so prone to look upon non-commissioned officers as the peculiar property of the Adjutant that we really create difficulties for ourselves. After all it is a matter of much more importance to the Captain of a troop or company what sort of men he has as the intermediate link between himself and the rank and file than it is to the Adjutant, and it is too much to expect that a non-commissioned officer of a perfect nature and ready trained will be put into his hands ready made, so that he has nothing to do but just to let things go on and everything will be all right. In this point, as in many others, we do not work the company system nearly to the full extent of which it is capable. We have become imbued with the spirit of centralization, and we find it very difficult even in small matters to shake ourselves free from its trammels. The position and responsibility of a Captain of a company is hardly yet fully appreciated, and it never will be so long as we consider that our duties to our companies are over when we have gone through one, or at the most two morning parades, and done a little routine office work as well.

Of late years a good deal has been done to remedy this, but more may still be done. In the German Service more in the way of training is positively and directly put into the hands of Captains, and the superior Officers are even cautioned against unnecessary interference;¹

¹ See "The Training of the German Recruit," in No. 147 of the Journal.—Ed.

it is recognized that different means are taken by different men to produce the same ends, and everyone is allowed to pursue his own means so long as the end is obtained, and a general uniformity preserved. At the present day in our Service the Captain has a good deal more to do with the training of his company than he had a few years back, but we are not yet at the end of our tether in this matter, and especially as regards non-commissioned officers the Captain might have more responsibility. It is suggested that the cause of discipline will be served by the extension of the company principle towards this end, such a proceeding will react on the Officers, and produce beneficial results to the whole organization, and so favour the great end in view.

Food.

This is a matter which may at first sight seem to have but little to do with discipline, but if it be recognized that the latter is only the resultant of many very different and distinct forces, physical and moral, the question of food is by no means one which can be overlooked. Discipline aims at the perfection of the human machine; health is one of the primary necessities for this perfection, and food is inseparably connected with health, the consideration of this question therefore fitly finds its place here.

It is a matter of common and everyday experience that a man's temper is very much dependent upon the state of his stomach, and it has passed almost into a proverb that things assume a brighter aspect after a good dinner. This may not perhaps be a very exalted view to take of human nature, but then unfortunately human nature, *per se*, has a good deal about it which is not very exalted, and it is imperative that the student of it should take these meaner qualities into consideration if he wishes to derive any practical results from his observations and any generally applicable rules for guidance. General Gordon is reported to have said, "It is ridiculous to pamper up the Army as you do; you never could take the field;" and added, "I live on meat and biscuit, and whatever I can get;"¹ now if such a spirit could be obtained on the part of the soldier no doubt it would be an excellent thing, and would tend greatly to the simplification of administrative questions, but it cannot be obtained. General Gordon was an exceptional man, and though perhaps there are many individual cases of the same nature, who really have the same contempt which he had for the *means* of life, yet such is not the feeling of the mass, and we have to deal with men as they are and not with men as they might be. A man who is turned out of bed to go through a long parade with either an empty stomach, or one which has only received the merest apology for a breakfast, is not in a state of mind or body which is conducive to his keeping himself well within the bounds of discipline if anything occurs to ruffle him, and this is especially the case with recruits, who not only usually have larger

¹ "Journal R.U.S.I.," vol. xxviii, p. 905.

appetites, and so feel the effect of an empty stomach more keenly, but also in their early days in the Service have morning parades which hardly the greatest enthusiast could call specially interesting; the steady continuance of the extension motions and the goose step being somewhat trying, even to the best temper.

It has been remarked by a General Officer that if we gave the men more to eat we should decrease crime in the Army, and he further said,¹ "I recollect being told by an Officer of Marines at Fort Cumberland that he had put a stop to all the insubordination that had previously existed simply by getting the men to eat something for breakfast. Half the insubordination in the Service is due to men coming in late at night and being turned out early in the morning, perhaps for 5 or 6 o'clock parade, without a meal inside them to put them in good humour. This Officer said the first thing he did was to get in some herrings and eggs and to send them round to the barrack-rooms every morning, and every man instead of having a piece of dry bread which he has no appetite to eat and a cup of bad coffee, made a bit of a breakfast, was in good humour with himself and his superiors, and then there was no more insubordination." Now this is an extremely simple and practical way of proceeding, and has about it an element of common-sense which at once commends it. Another General Officer stated quite recently that in reporting upon soldiers' food he spoke of it as "good, but not ample," and these two statements from Officers of plenty of experience show that something remains to be done in this direction.

Exact science, with calculations of heat value and work value, says that the soldier's food is sufficient, but then exact science cannot by its nature duly take into account the ever varying personal factors of the equation. What is sufficient for the old soldier, with all his muscles set and his bodily frame fully developed, is by no means necessarily enough for the hungry young recruit, who is daily adding to his supply of bone and muscle, and who also is doing work of a kind to which he has been utterly unaccustomed, and which demands bodily exertions of a kind very different from those required by his former avocation, whatever it may have been, but all necessary in the process of "setting him up" as a soldier.

The difficulties in the way of increasing the daily ration at the public expense may be great, but surely are not insuperable if the common consensus of the opinion of those who have experience point to the necessity for doing so, and in the meantime if a Commanding Officer sees that his recruits do not have as much to eat as they ought, although the old soldiers may be amply fed, much can be done regimentally in the way of supplying the deficiency. Much is done in many cases, and the way in which the subject has been discussed of late will doubtless lead to more being done by some who have hitherto been content to accept the existing order of things.

If the cause of discipline can be at all advanced by a little common-sense attention to the matter of food it is well worth while devoting this attention to it, for a young soldier before he has thoroughly

¹ "Journal R.U.S.I.," vol. xxviii, p. 901.

learnt the lesson of discipline will have plenty of temptation to break through its rules without having the additional one of an empty or only half-filled stomach to add to them.¹

Gymnastic Exercises and Athletics.

Connected, too, with the subject of food, inasmuch as both tend to create the "*mens sana in corpore sano*," is that of gymnastic exercises. A healthy frame hardened to endurance is a most important factor in the question of discipline, and nothing which tends to produce this healthy frame should be omitted. Gymnastics and all kinds of physical exercise are most valuable, particularly if they can be made interesting to the soldier. They brace him up in mind and body, and also provide occupation for the hours of leisure which, if unemployed, play such havoc with the spirit of discipline.

It cannot be too strongly urged that this spirit has to be cultivated, not only in the barrack-square and in the barrack-room, but also in every part of the life of a soldier. The problem is to make a man master of himself in all circumstances, and the exercise of the gymnasium and the practice of healthy out-of-door games are valuable aids to this. The two great temptations which a soldier has to confront when he is off duty are drink and impurity; either is highly prejudicial to discipline, the two combined are fatal. Unfortunately the temptations to both are always in his way, and are very difficult, indeed almost impossible to remove, but while philanthropists, moralists, and social reformers attack the monsters directly in front, Officers, while not neglecting a front attack, can do much valuable work in delivering one in flank, by encouraging a healthy and manly spirit among the men. A more extended and practical use of the gymnasium, such as is now becoming the rule in the Army, thanks to Officers of experience who are full of well-directed zeal for the good of the soldier, is a great help in this direction. Every single thing which will train the physical and moral nature a little more highly, which will teach endurance, patience, and self-control, cannot fail to help the cause of discipline, for, after all, what is this quality in its very highest aspect but the triumph of the moral nature over the physical? And in the case of the soldier we want to obtain this result, not by the fatal mistake of starving the physical and exaggerating the moral part, but by a judicious and side-by-side development of the two tending to produce a perfect man.

It is hardly necessary to refer to the desirability of encouraging sports and games in which the Officers take part, for they are so much an integral part of our system, and an exceedingly good and healthy part which can hardly be overvalued. They strengthen the bond of "mutual respect" between Officers and men, and as every tiny cog, however minute, is essential to the working of some complicated machine, so in dealing with that most complicated of all

¹ The above was written before the appointment of the Committee recently appointed to inquire into this subject.

machines, Man, which is what an Officer has to do, it is well to bear in mind that these questions of physical development, both by gymnastics and athletic exercises, have a very important and real influence upon the final result.

Leave.

The regulations on the subject of leave have of late undergone so great and radical a change that it amounts almost to a complete revolution. When first the new orders with regard to standing passes were issued, ominous growls might have been heard from some as to the results of this extension of the liberty of the soldier, but no bad effect has resulted from the experiment, and, without doubt, every regulation of the kind which treats a man more as a man and less as a child, is in the long run beneficial. The men feel themselves more independent, and being more independent they are happier, while discipline does not suffer from the existence of this feeling, on the contrary it gains, for the temptations to leave-breaking are minimized.

It cannot be too much borne in mind that the soldier of to-day is, as has been said before, a very different stamp of man from the soldier of some years back, and that some of the rules and regulations with which he was hedged round in the old days are really no longer necessary. If one of the main objects of discipline is to prevent crime, then every wise legislation like that of increasing the facilities of getting leave is all in the right way to achieve that object, and provided that duty is always done, and well done, there is no reason why the men should not have leave.

We know that we want to render a soldier self-reliant in the field, and this will only be done by rendering him self-reliant in peace, not by so compassing him about with rules and restrictions that every action of his life is laid down by regulation, but by so ordering the regulations that the right principle is inculcated, and the soldier is more left to himself, provided that the principle is not transgressed. In this light, extensions of the privilege of leave have proved an encouragement to all, and both directly and indirectly have tended to promote discipline.

Regimental Institutions.

Under this head may be classed all the various things which, apart from parade duties, make up the life of the soldier in barracks, such as canteens, recreation rooms, libraries, &c. They all have an important influence on the discipline of a regiment, for, according as they are rightly or wrongly used, they act strongly for or against it.

The canteen, for instance, unless a good deal of trouble is taken about the management of it, may be a regular curse to a regiment, only in a small degree less objectionable than the low drinking shops which cluster like fungus growths round a barrack or a camp. But though it may be an agent for evil from the point of view of

discipline, as well as from that of morality, yet it need not necessarily be so. No doubt, if we could have a teetotal army we should remove one of the main factors which militate against discipline, for what is more familiar than the saying that "drink is the curse of the British soldier?" It has been so in times gone by, and, though perhaps not in such a marked degree, it is so still. But we cannot have a teetotal army, and we never shall, it is better therefore to deal with the matter as it is, and not as it might be, and in that light it is desirable that a man should be able to get his glass of beer at the canteen, where, at any rate, he is free from the most objectionable features of beer-shops outside the barracks.

The only thing is that, like everything else, the canteen wants very careful looking after, and there should be no doubt whatever that it is *entirely* in the hands of the military authorities, and that external influence is not allowed to get the upper hand.

It is an open question whether it is altogether a good thing for the men to let the canteen be merely a sort of well regulated music hall within the barrack gates; it certainly keeps them from what is worse, but still it is a question whether it is altogether the best way. Of course the question is, strictly speaking, a moral one, but inasmuch as discipline in its extended and most comprehensive sense is a moral quality, it is difficult to dissociate the question of military discipline from that of morals. Everyone will admit, whatever views they may hold on the subject, that the usual style of music hall entertainment, however well regulated, is not an elevating style, and one of the objects of discipline being to raise the personal standard, unless we use our canteens in such a way that the men are really better off with them than they would be without them, we might just as well do away with them altogether. It is therefore here suggested that, taking everything into consideration, the military canteen had better just be what it professes to be, and not a music hall.

It can be used, though some people will consider this almost a contradiction in terms, as a check against our great evil, drink, and as such it should be used. Admitted that Englishmen are not likely to become a teetotal nation, and that soldiers are not going to be exceptions to the class from which they are drawn, let everything be done by strict regulation in barracks to make them temperate, and to conduct the management of the canteen with all possible care. It may be and will be, unless someone takes the trouble to see that it is not, a great evil, and it is usually rather a dangerous place in the fight for discipline, but, recognizing it as a weak place, it is not an unworthy task for any Commanding Officer to see that a very strict eye is kept upon the way in which it is conducted.

It is not intended here to say one word against teetotalism; men who are total abstainers are in many ways far more easy to manage than others, and all honour to those who are; but as a majority of teetotalers in a regiment is a Utopian dream, the question has to be dealt with of making the men as temperate as possible.

This works back again to what has been said before as to the desirability of encouraging athletic games and gymnastic exercises,

for all these things work towards the same end. If a man be an idle loafer, directly he is off duty, the chances are ten to one that he will drink, if he does that, discipline gradually but very surely goes, so it is well to give him as much healthy employment in the way of recreation, as well as in the way of work, as can be managed.

Recreation Rooms.—Too much cannot be said in favour of regimental reading and recreation rooms. There are plenty of men in the ranks now-a-days who like to read, and certainly a barrack-room under the most favourable aspect is not the best place for quiet pursuits, so to many the reading room is an unmixed blessing. People outside the Army have very little idea of the really high standard of intellectual attainments which is very often to be found among men in the ranks, but those in the Army do know, and they know moreover that such men are just those who are wanted, everything therefore should be done to encourage them, and to give them an opportunity of cultivating their tastes.

All these little details of the interior economy of a regiment are really most important to the cause of discipline, quite as important in their way as the actual discipline pure and simple on parade.

We all know the well-worn old saying, which has in its day done any amount of harm because of its half truth, namely, that "the greatest blackguards make the best soldiers." Now if this be the truth, and the whole truth, what good is there in trying to raise the standard of the men, and make them lead decent and comfortable lives—if they have enough to eat, a proper place to sleep in, and their health is properly kept up, what good is there in doing any more? But it is not the whole truth, it may be partly true, but then is it true because really a blackguard makes a good soldier *ipso facto*, or is it not rather because many of the qualities which go to make a blackguard are those which, if rightly directed, also make a soldier? A certain reckless daring and an independent spirit, if allowed to run riot, are very likely to lead to making a man of no use to himself or to anyone else, but, if properly dealt with, are invaluable in military life. The circumstances which have given rise to this questionable dictum have been circumstances in which the blackguard under external influences has forgotten his blackguardism, and has used the qualities, which he has hitherto wrongly employed, in the effort to do his duty as a soldier; he has proved himself a good soldier, not because he was a blackguard, but in spite of his being one.

Now, at the present day we are not yet quite free from the trammels of this wrong idea; we are very much afraid of making our men soft, and a very proper thing to be afraid of too, but the cultivation of their better qualities will not have this tendency. If, as has been said: "discipline must be looked upon as the main sheet anchor to overcome man's inherent fear of death and danger, and the bonds must be tightened up when the critical moment arrives,"¹ surely this

¹ Remark of a German Officer, quoted by Colonel Hale in a lecture at Aldershot, 1888.

tightening up will be all the more easy a process if a man's nature has been developed in its higher qualities, than if he has been made simply a very superior animal.

All the interior arrangements, whereby life in barracks or camp is made to take as high a standard as possible, will tend towards discipline, and no labour expended in making the soldier's life a comfortable though not a luxurious one, and in trying to keep him from simple animalism, will be labour lost.

Sergeants' Messes.—Here, in passing, a few words may be said about sergeants' messes. These institutions, excellent as they are in themselves, and greatly as they tend to raise the tone of the non-commissioned officers, and so to help discipline, yet are not always an unmixed good. In spite of regulations to prevent anything of the kind, a good deal often goes on in sergeants' messes which is in the highest degree prejudicial to discipline. A sergeant's pay is not very large, and often things are done by the mess which it is difficult to understand how the pay they get can be made to do, viz., occasional dances, entertainments of one kind and another, and above all, arrangements for card parties with other sergeants' messes, and so on. An Officer's pay will scarcely be made to cover such things, and it is difficult to see how a sergeant's can. Every Commanding Officer and every Adjutant will probably be able to call to mind, not one, but several instances of outside debts contracted by sergeants, which they cannot meet, and which spoil the career of many a promising non-commissioned officer. Such things do not help discipline. When once a man gets his head under water and cannot meet his liabilities, it is idle to think of doing much in the way of disciplining him, or expecting him to discipline others, till he can again "look the whole world in the face."

The evil may not be a very great or widespread one, it is to be hoped that it is not, but none the less it does exist in certain cases, and sergeants' messes want to have a very careful and strict eye over them, not a worrying interference, but a wise supervision so that things which it is evident that men in that position cannot afford to do, may be checked in time, otherwise much harm will be done.

Employment of Discharged Soldiers.

The question of the employment of discharged soldiers is one which is at present very much before the minds of those who take an interest in the Army, and it is a question which is very really and intimately connected with that of discipline, both directly and indirectly; directly, because the more a man's stake in the Service is increased, and the more he has to gain by good conduct, the more inducement there is to him to behave well, and indirectly because it is a question which very much affects the non-commissioned officer class, and everything which can be done to improve this class and get good and trustworthy non-commissioned officers reacts at once for good upon the discipline of the rank and file.

In Germany the question of employment for men who have served

and are entitled to pension has been taken up and made an integral part of the military system, the result being, in the opinion of competent judges, a most beneficial one. There, the employment of pensioners is actually a part of the Pensions Act, and civil employment and pension go side by side, and are mutually the complement one of the other. Either the employment takes the place of pension altogether, or does so in a great measure, and consequently lightens very considerably the burden on the State, as well as exercising a very beneficial effect upon the soldier, for all recommendations for civil employment on leaving the army are dependent upon good conduct while serving.¹

Now while it is of course useless to take a system which suits one nation under certain specified conditions, and apply it to another nation in which those conditions are wanting, it certainly does seem that we in England might adopt some such practice as that in existence in Germany, modifying it to suit our own circumstances.

The acknowledged excellence and the popularity of the Corps of Commissionaires has shown us, did we need showing, what an opening there is in this direction, and it would be a very good thing if we could extend this principle of the employment of old soldiers and sailors, and if it could be reduced to a systematic plan under the encouragement and direction of the State. What is a more pitiable sight than to see an old soldier or sailor in a destitute, miserable, and ragged condition, wearing perhaps the dingy and faded ribbons of the medals he has won, begging by the roadside, or to see the crowd of semi-clad, dishevelled-looking men who wander about the neighbourhood of great camps, such as Aldershot, and pick up a precarious livelihood by selling refreshments to the troops on field-days? Does such a sight inspire in the minds of men still serving, any of that high spirit of pride for their profession which is all essential to discipline, does it encourage them to keep on in a steady and well-conducted course with the probable hope of attaining, when they leave the Service, to a good and independent position? Surely not, surely it does just the very opposite to this.

Of course it will be at once said that the men such as those described above are not those who would have done any good in any case, that they are the dissolute and the drunken, the hard bargains of the Army, and that anyhow they were bound to "go under." This is in a great measure true enough, but it is not so in every case; there are amongst them men who have tried and failed, weak ones, perhaps, but then the world contains many such, and a little judicious encouragement will often train some of the weak ones to be stronger than the strong in the battle of life, encouragement which an assured future might perhaps give. Looking at the root of the matter, in very many cases what incentive has been put before a man to consider his military career as only one stage in life's journey, and to look on to another position after he shall have served his time? It is essential that when a man takes off his scarlet coat and steps into the ranks of civil life he should have some employment whereby he may

¹ Reichs-Militär-Pensions Gesetz, 1870.

support himself and probably a wife and family, and if only we could arrive at some system of making such employment a certainty for a well-conducted man, we should make great strides in obtaining the discipline we wish to get.

Never mind about the men who really after all our efforts turn out as no good, it has already been indicated what course we had better pursue with them; but men who do try and succeed in doing well in their military career should have some prospect of future employment to look forward to. Everyone with any experience of the Army knows well the anxiety which men display towards the end of their service to get themselves employment in civil life, and there are probably few Officers serving who have not taken a good deal of trouble to help men whose value they know, to get work, but whatever individual effort can do in the matter it is not the same thing as if some general system could be adopted for the attainment of this object. It is always a precarious matter for the soldier to depend upon the assistance of an individual, and very likely in the changes and chances of military life those Officers who know him best will not be at hand when he comes to take his discharge, to give him the helping hand he needs; whereas if from the commencement of his career he were aware that if he continued long enough in the Service to gain his pension, employment in after years would reward him, he would have throughout a strong incentive to walk in the straight paths of discipline. Put something before a man which is worth his gaining, and at once you give him a motive which appeals to the better part in him, and this is half the battle in getting discipline.

While he is in the Service he can look forward to promotion, but we want to have something on which he can count in the future, and the certainty of employment will prove a very powerful auxiliary in maintaining discipline, both directly, because it gives the men more to gain and more to lose, and, indirectly, because it will attract a good class of men to the ranks, when they see that the Army means not only a temporary provision, but if rightly used an honourable profession, and a livelihood in the days when the barrack and the camp have been left behind.

The objection, of course, is the multitude of civilians who have to gain their living, and who cry out loudly if what they regard as their rightful heritage is taken away and given to old soldiers and sailors. This is a genuine objection perhaps, but it is not such a very strong one; the numbers who have to find work and food remain unaltered, and it is difficult to see why if any class has to go the wall, it should be the old soldier class. We admit that in our recruiting under a voluntary system we have to compete with the labour market, and if a young man takes up soldiering as a profession, just as he might take up any other calling, there seems no reason on the face of things why he should be in a worse position as regards his future than others. All cannot rise to the highest non-commissioned ranks, and for the great majority some calling will be necessary when they go into civil life, and if we have taken a man's best years we ought to do something to help him when he leaves us.

While he has been serving his country his civilian brother has had the whole labour market open to him, and there are plenty of lines of life, indeed it might be said nearly all, which are open to the latter without encroaching upon those connected with the Government departments of the country in which the old soldier could well be employed.

At our public offices why should we have civilian messengers and employés of various descriptions doing duties which old soldiers would do equally well, indeed very much better, for they have been trained in the best of all schools?

It is not an increase of pension which is wanted, that would be undesirable altogether, it is work, it is that the country should be able to guarantee to a man that, if he makes a good soldier, when his military career is finished something else will be found for him to do, and having such a guarantee to keep in mind all through his service will have a beneficial effect both upon himself and upon the Army generally.

Nor is the question one affecting pensioners only; we have the larger class of our reserve men to look after also, they want work as much as anyone, and they are certainly at a disadvantage in finding it, besides that the little sum of money which they have in hand when they leave too often inclines them to put off looking for work till they have begun to go down the hill, which ends in their losing the qualities which their military training has given them, and becoming simply loafers. Surely it is worth while to think of these things, and to let our men know that having got them we will stand by them, and make some systematic effort both in Army and Navy to get them employment under Government when they have done their time with the colours.

Some people have a sort of dread lest England should become too military; this dread was rampant in times past, and even now it lingers on. They think that if when a little rough work has to be done they pay their soldiers to do it for them, and look upon it as only being their immediate concern to pay the bill, all will go smoothly, and the work being done, they tolerate soldiers rather than approve of them. This spirit is not as bad as it was, but it wants a little exorcising yet, it is a fatal one for the Army and an unworthy one for any citizen to possess, whatever the work which has to be done may be, it cannot be done without a well-disciplined force, and the mental attitude of the country towards the Army is a powerful though not strictly measurable factor in the question of discipline. There should not be a particle of jealousy about men who have served as soldiers getting Government employment afterwards; they deserve it, and they should have it, for they have fulfilled one of the primary obligations of an organized state of society, and rendered personal service to the State.

England has yet much to learn about her interior and exterior organization, and if she still dreads becoming too military, it behoves her to take care that the part which is military is thoroughly and unquestionably efficient; and since one of the most important items of

efficiency is discipline, this question of the employment of soldiers in civil or semi-civil capacities should be fairly considered as bearing upon the latter quality.

Combined Manœuvres.

The best means of promoting and maintaining discipline can hardly be considered to have been fully dealt with without some mention having been made of the subject of combined manœuvres, considering them in the light of their value from a disciplinary rather than from a tactical point of view, the latter being beyond the scope of this essay.

Combined manœuvres are valuable in this respect for many reasons. It is an excellent thing that a regiment should be from time to time taken out of a barrack and placed under canvas, as this makes a very good opportunity of testing progress, and is more assimilated to that actual work of a soldier in war for which we are trying to train the men. In a barrack or standing camp the routine goes on steadily, and everyone gets to know his place and duty so well that no very great effort is required to keep things going, but when men are under canvas all this is different, it causes a general shake-up, so to speak, of all ranks, and throws everyone more upon his own resources, which is a very desirable thing, for Commanding Officers can then better gauge the value of the Officers, non-commissioned officers, and men under them. It does away with a mechanical method of going on, and is beneficial to everybody; weak points and strong ones will appear which have hitherto perhaps escaped observation, and it is better that we should discover our weak points before we actually take the field in war, when it may be too late to remedy them.

There is also another point in which combined manœuvres are valuable; we think a great deal of *esprit de corps* and try to encourage it, rightly too, for it has important consequences, but we are rather inclined to have an *esprit de corps* which is that of an arm rather than of an army, and this is not desirable. There is a tendency towards a feeling of cavalry *versus* infantry, infantry *versus* artillery, and so on, which is not good, and does not help towards a harmonious working of the whole when all arms are placed, as they must be in the field, together.

Now, this feeling arises in a great measure from isolation of the different branches and arms, they do not know very much about one another as an ordinary rule, and so this sort of jealous feeling gets intensified and magnified by ignorance. Much of it might be removed by a more extensive use of combined manœuvres, all arms would learn that one is just as essential as the other for the conduct of war, and a better knowledge of one another would tend to more harmonious working.

It is not meant that it is necessary that we should mass a great number of troops in a distant camp, and undertake large and extensive operations; they are a great expense, and it is questionable whether they are the most valuable for instructional purposes, but we

could set about what we want in a smaller way. Wherever a brigade of infantry, a regiment of cavalry, and a couple of batteries of artillery can be got together, a very useful instructional camp could be formed without any very great expense, and all ranks, from the Commanders downward, would then have an opportunity of learning something more about one another, of learning that no arm by itself is the Army, but that all have their place, and thus friction between different arms would be removed, and useful lessons of discipline be taught.

The Volunteers make much more use of camp than the Regulars because they are obliged to do so if they want really to test their progress in soldiering, and it would be a good thing if we could follow their example, and rub up against one another more freely.

The use of such a centre as Aldershot is invaluable, and leads to more real soldiering being learnt, and to a better discipline, in its wide sense, being obtained in the course of a couple of drill seasons than would be obtained in years elsewhere if a regiment were stationed in some isolated barrack. It is not necessary to make another Aldershot, or to attempt anything on such a large scale as that; but surely we could manage that in every district, after the harvest is off the ground, we could put the men under canvas, all arms together, and work them together so as to lead to a more comprehensive spirit among them, and to test the instruction which has been given to them.

Such a course would not be productive of any great expense, and the result would be so beneficial that it would be money well laid out.

Writing to the Papers.

Finally, before leaving the subject, there is one point of a very different nature to be touched upon, namely, a practice which is growing daily of writing to the papers about questions of regimental and Army discipline and administration—a practice which is most harmful. We are all more or less guilty in this matter, and it is one which should be checked, or the cause of discipline will inevitably suffer.

It is not that we want any new regulations on the subject, it is only that we want to observe more strictly the old ones, and to remember our position and duty as soldiers before we hurry to air our grievances in print.

Take up any of the Service papers, and how many "growls" are there to be found from all ranks on all sorts of subjects connected with military life. Now, all this does great harm, and argues the existence of a wrong spirit; perhaps it is true that it is an Englishman's privilege to grumble, but it is not an English soldier's privilege to grumble in print, indeed it is his bounden duty not to do so.

The spread of education, which has been previously referred to, has brought this evil upon us, and it is very unfortunate that it has done so, and the sooner we shake ourselves free from it the better. If anyone in the Army has a legitimate grievance there are legitimate channels for ventilating it, and the various letters signed with all the

pseudonyms which reveal the writer's status while they conceal his identity, are not the legitimate channels. Instances could be adduced by the score of this sort of thing if it were necessary, but it is not; Officers who think that they are hardly used, non-commissioned officers who have a grumble about something, men who want something which the regulations do not provide for them, all air their opinions in the Press, and this argues both a want of confidence in the higher authorities, and a want of loyalty to the military system, which is most reprehensible.

It is not denied that there are grievances to rectify, changes in social conditions to which corresponding changes in military conditions should be adjusted, and improvements to be effected, but it is the business of the authorities to do this, and they can and will do it without having their duties pointed out to them by those under their command through this medium.

It is not to be supposed that they are influenced by these growls, their sense of duty must preclude that, and, as a matter of fact, at the present time it is hardly possible that any real grievance can exist which will not be patiently listened to, and thoroughly investigated when it is properly put forward in the duly authorized channel; any attempt therefore to force the hand of responsible authorities by letters to the papers is very much to be deprecated. Real evils can be brought to the knowledge of those whose duty it is to remedy them in a better way than this, and imaginary evils had better be buried in the bosoms of the malcontents in the hope that time will lead them to take a juster view of their position, and not have their sore point kept sensitive by seeing their grievance in print with probably a host of other letters on the subject tacked on to the original one. So long as men are serving they should abstain from writing grumbling letters to the papers; when they have left the Service the conditions are different, but even then, if they have the interests of the Army at all at heart, they will be very guarded in the use of their pen in this way, for the grumble pure and simple is not very edifying or very useful. These remarks are not intended to apply to letters thoughtfully written by men of weight and standing who are fully aware of their responsibilities, and write upon matters of administration which they thoroughly understand, and which they wish to present in the light in which they appear to them; such letters are on a different footing altogether. When a personal feeling is not the motive, but real zeal for the Service and desire for its good, a clear and impartial discussion of facts has a good result, it sets others thinking, and diffuses knowledge on various points, and letters dictated by this spirit do good, but the remarks are directed against the publication of the thousand and one petty little personal grievances which are too apt to find their way into the papers, and are ventilated by those who only see one very small section of the matter, the section which immediately concerns themselves, and in the cause of discipline a Commanding Officer will do well to check sharply any such letters as these being written for publication by those under his command.

Conclusion.

The object of this essay has been not to propose any new or sweeping changes, or to suggest a course of action at variance with that which has for so many years been pursued in the English Service; it has been simply to review the existing machinery of discipline, and to show that this by itself is fully competent to attain the desired end provided that it is faithfully and loyally used, and carried out in the fullest extent of its spirit as well as of its letter.

The question of disciplinary companies which are in vogue in so many Continental armies has not even been touched upon, for it is foreign to the spirit of our English ideas, and with our system of voluntary service need not be used. We have already got all that we need for our work, and the only question now is, how to use our materials aright.

The attainment of discipline is a long and sometimes an uphill task; like most other things it is only done by slow degrees, and success is only to be achieved by persevering efforts which never lose sight of the goal, but steadily inch by inch fight their way towards it.

The question is one of combined moral and physical qualities, and must be considered in all its complex relations by those who would discipline the men under them. No incident of military life is too small to exercise its influence upon the result, no incident is so important that it alone can do the work; the whole process is that of some great and complicated machine the effect of which is clearly evident, but to the production of which effect the perfect adjustment of the minutest cog, of the most delicate and almost imperceptible spring, is necessary.

The end before us is a noble one, the means are surely therefore worthy of our earnest attention. Soldiering is now no holiday pastime, it is not and can never be an occupation to fill up odd moments, and to be taken up as a sort of semblance of employment, it must be the real hard and earnest work of a life.

Just in proportion as everyone feels this, so will a perfect discipline be easier of attainment. No one must think that such and such a point is not his peculiar province but is more the duty of the Colonel, or of the Adjutant, or of the sergeant-major, or of someone else; the duty of working for discipline in every point is one which belongs to each individual in his own sphere, and by each carrying it out in his own sphere, the spirit and tone of the whole will be raised.

"The chain of responsibility" must be no mere figure of speech, it must be a reality; the chain must have no weak links, they must all be capable of bearing the maximum strain which is ever likely to be exerted, and this in military life is the greatest possible.

The work of peace-time, and all the routine of ordinary barrack life, may at times seem dull and uninteresting, and it may not be easy to see how it all works towards the great end, but nevertheless it does so work, and the end can never be achieved without all this routine. We may think that we should like to strike out some new

line, and throw over all the old ideas, but we can never do so, there is no royal road to success in this any more than in any other task. What we can do, and what we should do, is to alter the old ideas where necessary so as to make them conformable to altered conditions of things, but the principle which dictated them holds good to-day as much as it has ever done in time past, and we shall miss our mark if we fail to appreciate this.

The conclusion then is that we should first try to realize the conditions of the problem, and train *ourselves* to a high state of discipline, and then set to work in every action of our life as soldiers to apply these conditions. Whether it be in the giving of a simple order, the telling off of a prisoner, the inspection of a barrack-room, or in any other circumstances whatever, we should look to the end, and endeavour with all our might to be thorough and whole-hearted in striving for this end.

The past history of the British Army has been a glorious one, and it rests with every Officer now serving to make the future history worthy of the traditions of the past; this is to be done by an unremitting attention to detail, a steady devotion to duty, and a constant endeavour to grasp the spirit of each rule of military life, and to loyally carry it out in practice.

His utmost is demanded from each; no listless easy-going temper will do, but a strong well-directed energy which sees clearly the end to be attained, and never falters till the task is done.

ESSAY.¹

DISCIPLINE: ITS IMPORTANCE TO AN ARMED FORCE, AND THE MEANS OF PROMOTING AND MAINTAINING IT.

By Captain C. E. D. TELFER, Worcester Regiment.

"Viresco,"

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PART I.

“In anarchy there is still a nation,—without discipline there is no longer an army!”—LAMARTINE.

Discipline: its Aim and Object.

THE great aim and object of all discipline is not only to maintain order and to insure obedience and submission to authority, but also to produce and establish that cohesion between the individuals composing an army, which is essential if complete success is to be obtained in the operations in which it may happen to be engaged.

Such cohesion is the foundation of a mutual trust and reliance extending through all ranks, from the highest to the lowest. Its

existence in an armed force, besides securing a compliance by individuals with the orders which they may receive, gives rise, in addition, to an intelligent desire to carry out the instructions of superior authority, not only in the letter but also in the spirit, and furthermore imparts a reliable courage, which would otherwise be wanting, to large bodies of men.

Importance in large Armies of Present Day.—With the vast armies of the present day, considerable portions of a force taking the field must at all times be more or less withdrawn from the direct supervision of the Commander-in-Chief, and hence, as great individual freedom of action must frequently arise, it is most necessary that discipline should be shown in its highest form, by all ranks loyally contributing in every way to the success of the general plan, without regard to the fulfilment of selfish ideas and aims.

Opinion of Jomini.—"Concert in action makes strength," says Jomini, "order produces this concert, and discipline insures order, and without discipline and order no success is possible."¹

Period from which Campaigns have been selected for Illustration.—The records of the military history of all ages teem with examples which might be quoted to support this assertion; but in the following pages, I have confined myself to the consideration of a few episodes in the campaigns which have been waged during the period of about 120 years which elapsed between 1757 and 1877 inclusive. These limits have been fixed because, on the one hand, more remote researches into history would lead up to events which happened under conditions differing widely, in a military point of view, from those which now prevail, and the examination of which would be beyond the limits of the present essay; whilst, on the other hand, although during the past ten or twelve years, several triumphs of disciplined over undisciplined force have been presented to the world, yet these have scarcely become sufficiently matters of history to be open to examination, or to comparison.

I shall endeavour to illustrate, by a careful consideration of examples thus selected, the importance of discipline to military bodies, and shall in conclusion draw attention to certain changes which have occurred in the conditions of warfare, which will tend to render discipline of even greater moment in the campaigns of the future than it has been in those of bygone days.

Lessons taught by History of Campaigns included in this Period.—The history of the campaigns included during the above period teaches the following lessons:—

1. That, in battle, disciplined troops generally exhibit a capacity for concentrating superior force on decisive points, and hence of being victorious and inflicting heavy losses on their opponents, when numerically inferior to them; whilst, on the contrary, bodies of men deficient in discipline generally evince an incapacity for combination or for sustained effort on any fixed principle.

2. That discipline confers a steadfast courage, coolness in danger,

¹ "The Art of War," chap. ii.

and rallying power; and that where it is absent, an impulsive and uncertain valour and liability to panic will generally prevail.

3. That the presence of discipline is a sure guarantee of attention to details, aptitude for obtaining information and security, and power of executing all operations, apart from actually fighting, with completeness and precision; and that its absence always leads to carelessness and neglect in such matters, coupled with frequent miscarriages and failures, the result of the want of order and subordination.

4. That discipline can alone be relied on to prevent those barbarities, not only against the enemy but also against the persons and property of the inhabitants of the theatre of war, which invariably disgrace the operations of undisciplined troops, and which are calculated to embitter resistance and increase the difficulty of supply.

1. *Capacity for Combination and Concentration possessed by Disciplined Troops, and Incapacity of Undisciplined Troops in this respect.*

EXAMPLES: (a.) *Battle of the Pyramids.*—The battles in which small European armies have been pitted against the vast hordes of Eastern potentates afford some of the most striking examples that can be adduced of the superiority in fighting power, and in the capacity for concentrating their energies at the right time and place, which is conferred on bodies of armed men by the cohesion arising from discipline. These examples are specially remarkable in cases in which the European soldiers have been individually inferior in strength and skill to their warlike opponents. Thus when the French were advancing from Alexandria to Cairo in 1798, their force had been reduced by losses in battle, by sickness, and by detachments to about 10,000 men.

On the morning of the 21st July they were confronted at Embabeh by 30,000 men under Mourad Bey.

The right wing of this force rested on the Nile and, being principally composed of infantry, occupied to the number of 20,000 men an entrenched camp, which was further protected by forty pieces of artillery. The Mameluke cavalry, to the number of from 9,000 to 10,000, constituted, however, the flower of Mourad Bey's army, and formed his left wing. The right of the Mamelukes was supported by the entrenched camp, their left extended towards the Pyramids.

Napoleon has left on record that the French greatly dreaded the impetuous bravery of the Mamelukes. Their horsemanship, skill in the use of arms, equipment, and valour rendered them, considered individually, the most formidable warriors in the world; and so marked was their superiority in these respects to the French soldiers, that Napoleon has stated that "two Mamelukes could make head against three Frenchmen!"¹ Discipline, which enables men to combine, was the one thing wanting to render the Mamelukes irresistible on the field of battle; and without this they were doomed to defeat when matched against regular troops in the battle of the Pyramids. Napoleon took up a position with his left wing supported by the Nile,

¹ Montholon's "History of Captivity of Napoleon."

his right by a large village; and, after reconnoitring the enemy's camp, he determined to prolong his right wing, which was commanded by Desaix, to follow the movement of this wing with the whole army, and thus by a flank march to pass by the entrenched camp. Mourad Bey observed this manœuvre, and judging that his only chance of success lay in arresting it, he moved against Desaix at the head of two-thirds of the Mamelukes to the number of between 6,000 and 7,000 horsemen. The French received the attack in squares, but so rapid was the charge and so fierce the onslaught of the advanced guard of the Mamelukes, that the square in which was Desaix was thrown into disorder. The advanced guard, however, was not numerous; a few minutes elapsed before the arrival of the main body, and this gave the French time to close their ranks.

Nothing could exceed the bravery displayed by the Mamelukes in their vain efforts to penetrate the squares. Approaching under a heavy fire to within twenty yards, they discharged their carabines and pistols at the enemy; and finding that their terrified steeds would not advance nearer, they turned their horses' heads away from the squares, and attempted by reining back to break the ranks of the French. Individual heroism, however, can never compensate for the lack of order and of combined action; and after suffering heavy losses, the Mamelukes fell back in great disorder. So great was the confusion that they divided into two bodies; one of these, numbering 2,500 men, with Mourad Bey retired to Ghizeh; the other fell back on the entrenched camp. Thus the Commander-in-Chief himself set an example of the effects of indiscipline by separating himself from his army at a critical moment. Napoleon detached two battalions to occupy a defile which lay between the camp and Ghizeh; and thus closed this line of retreat to the main body of his opponents, and simultaneously cut off Mourad Bey from the bulk of his army. At the same time the French advanced against the camp.

The defenders of the camp still greatly outnumbered the French, as they had suffered little. All the infantry and a third of the redoubtable Mamelukes, not having been engaged, were practically intact; and under such circumstances a disciplined army would have still had a hope of victory; but want of cohesion rendered them unable to combine for action, and hence their numbers and individual valour were of no avail. Finding themselves between the French and the Nile, they thought only of making good their retreat across the latter. Some secured boats, many others were drowned in attempting to swim, and it is estimated that 5,000 Mamelukes alone thus lost their lives; the sacrifice of life from the whole army fully reaching 10,000 men.¹

(b.) *The Battle of Meeanee.*—The battle of Meeanee offers, perhaps, the most striking example in modern times of the triumph of a small disciplined army over brave but undisciplined opponents having great numerical superiority.

¹ The foregoing is compiled from the following: Montholon's "History of Captivity of Napoleon." Scott's "Life of Napoleon." Long's "France and its Revolutions."

Sir Charles Napier was in command of the British forces in Scinde, and his advanced guard discovered the enemy's camp at about 8 A.M. on the 17th February, 1843. The Beloochees numbered 35,000 men, of whom 5,000 were cavalry, they had fifteen guns, and as the events of the battle proved, they were brave to a fault, and were filled with enthusiasm by the consciousness of former successes. Their infantry was strongly posted in a skilfully prepared position along the dry bed of the river Phullalah (Fullailu), the bank of which served as a natural rampart, and sloped towards the open plain in front. The Beloochee artillery was divided into two masses, which were placed on the flanks of the line.

The wings rested on dense woods, which the enemy had occupied and prepared for defence, and which extended on each side of the plain, over which the British forces were obliged to advance, and thus enabled the Beloochees to threaten their flanks.

Sir Charles Napier's army was reduced to 2,400 men; his only European battalion was the 22nd Regiment, about 500 strong, the rest of his force being composed of Sepoys led by English Officers. His artillery consisted of twelve guns. It may here be remarked that at Meeanee, as at every other battle gained by British armies in India, the Anglo-Indian troops were not rendered homogeneous by ties of kinship or race, but by the bonds of discipline alone.

After reconnoitring the enemy's position, Sir Charles Napier came to the conclusion that their flanks were so secure that any turning movement was out of the question, and the General therefore determined on a frontal attack.

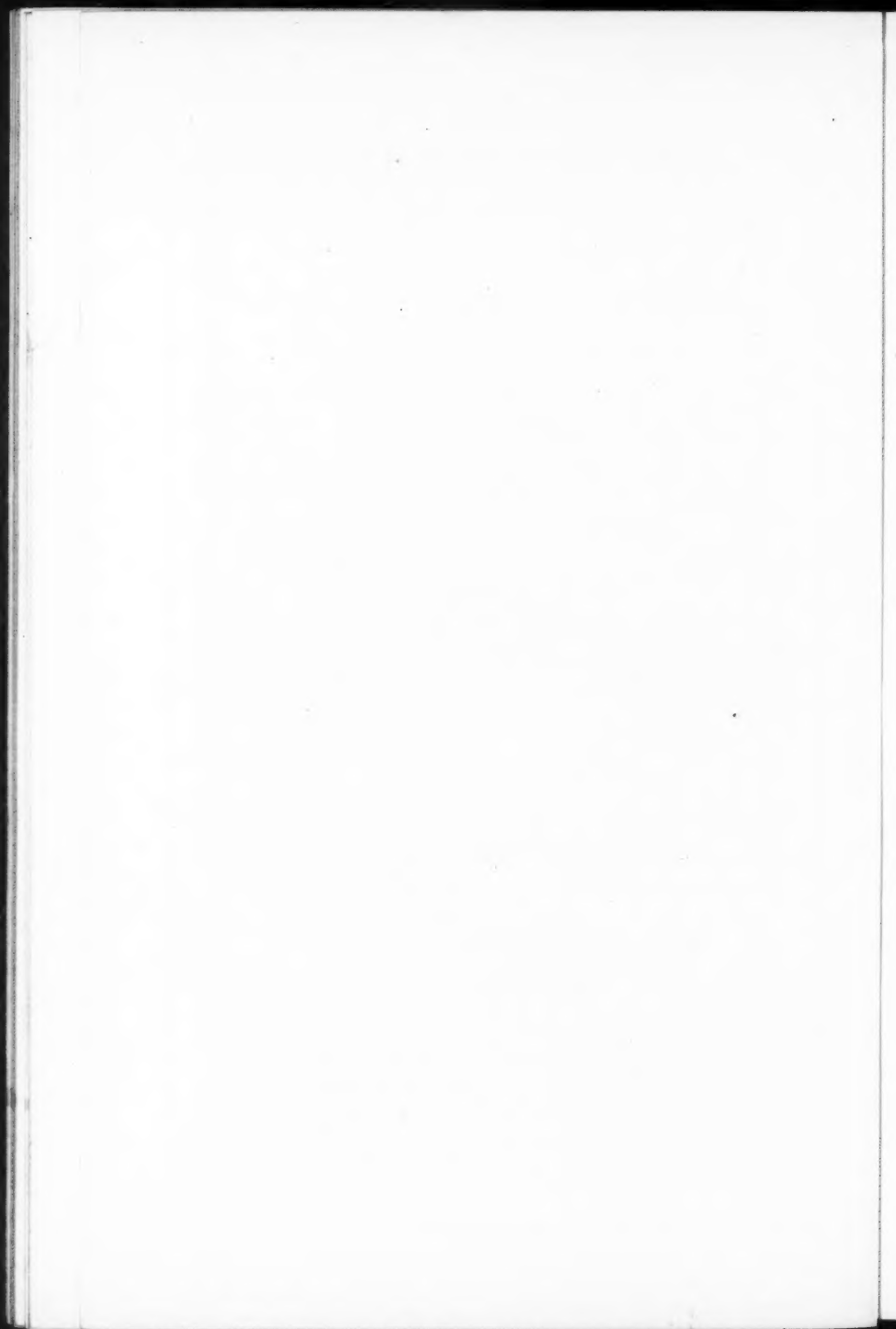
He turned his baggage into a kind of fort, which was garrisoned by 400 men; and his rear was, by this means, partially protected, but at the same time the fighting strength of his army was reduced to scarcely 2,000 men: and having drawn up this little force in an echelon, he gave orders for an advance which was made under a heavy fire.

The wood on the British right was bounded by a wall, in the middle of which was an opening. This wood was occupied by 6,000 Beloochees, but owing to the height of the boundary wall and the fact that it had not been prepared for defence, the enemy could not fire over it.

General Napier, observing this, at once pushed a company of the 22nd through the opening in the wall, and ordered them to hold it to the last. This stroke met with complete success, and by it eighty English soldiers were enabled for three hours to paralyze the action of 6,000 Belooches.

Without doubt the conception of this idea was due to the genius of the British General, but its success depended on two things: first on the wonderful confidence conferred by discipline, which enabled a company to confront an army, and second on the absence of the capacity for combined action which characterizes undisciplined bodies, and which rendered 6,000 brave men helpless in the presence of eighty.

When the British had advanced to within 100 yards of the Phul-



lalah, Sir Charles Napier gave the order to charge. The enemy received the advancing line with a volley, in spite of which the 22nd quickly gained the crest of the bank, but there, "thick as standing corn and gorgeous as a field of flowers, stood the Belooches in their many-coloured garments and turbans; they filled the broad bed of the Phullalah, they clustered on both banks, and covered the plain beyond. Guarding their heads with their large dark shields, they shook their sharp swords beaming in the sun, their shouts rolled like a peal of thunder, as with frantic gestures they rushed forwards, and full against the front of the 22nd dashed with demoniac strength and ferocity."¹

The battle raged for three hours and a half, the opposing armies advancing to within three yards of each other, and sometimes intermingling. At last Sir Charles Napier ordered the cavalry to charge the enemy's right. Making their way by the village of Kattree, the native troopers passed through the Beloochee guns on that flank: the 9th Bengal Cavalry charged the enemy's infantry, whilst the Scinde Horse fell on their camp and engaged their cavalry.

Slowly and unwillingly the enemy now gave way and fell back; and at the same time the large force, which had during the whole battle been contained by one company of the 22nd, evacuated the wood on the right of the Anglo-Indian army, and joined the main body of the Beloochees, which retreated, leaving 6,000 men dead or dying on the field, and abandoning the whole of their guns, stores, and baggage. The loss of the British Army amounted to twenty Officers and 250 men killed and wounded.²

Undoubtedly this brilliant victory was attributable in part to the skill and distinguished ability of Sir Charles Napier; but not even the genius of a Wellington or of a Napoleon could make 2,000 men victorious over 35,000, unless the victors possessed some great inherent superiority over their antagonists.

The Beloochees were certainly not wanting in courage, and their dispositions were on the whole skilfully made; but their attitude throughout was characterized by an absence of sustained effort, with any object beyond that of offering a blind resistance, and by an incapacity for assuming the initiative, which arose from the want of that concert in action of which discipline is the parent. Want of discipline rendered the Beloochees unable to combine their efforts, and hence alone prevented them from positively mobbing their opponents.

As we have seen, the Beloochees, recognizing the advantage of a flank attack, had massed 6,000 men in the wood on the British right; but the unexpected appearance of a single company checked these at the beginning of the action, and this large force hesitated, during three hours, to take the initiative against a little band whom they might have annihilated by a single rush.

Again, at the end of the battle, the appearance of 500 Anglo-

¹ Major-General W. Napier: "Conquest of Scinde."

² "Conquest of Scinde," and "Life and Opinions of General Sir Charles Napier," by Major-General W. Napier.

Indian cavalry on their flank produced a paralyzing effect on the Beloochee Army, although their own cavalry, to the number of 5,000 men, were at hand, and might have ridden over the British squadrons with ease.

At the Pyramids and at Meeanee, it may perhaps be said, the victors were opposed by bodies of men who were inferior not only from their want of discipline, but also from the absence, throughout their ranks, of any regular organization.

Campaign of 1870-71 (latter portion).—In the latter part of the Campaign of 1870-71, however, the masses brought together by the French Republic were organized into companies, battalions, brigades, &c., in a similar manner to the German Army; but the encounters which took place between these armies were almost invariably as disastrous to the French as the Pyramids and Meeanee were to the Mamelukes and Beloochees; the principal reason for this being that the French levies were rapidly assembled and hurriedly trained, and hence were admittedly wanting in that discipline which was the most striking characteristic of the German invaders.

The French had four large armies in the field, all of which were, in conjunction with the garrison of Paris, to act simultaneously against the Germans. Each of these armies was encountered by a numerically inferior German force, and each of them was finally defeated with heavy loss. It is estimated that in these battles the French suffered to the extent of 40,000 men killed and wounded, 67,000 prisoners, and 80,000 under Bourbaki driven over the Swiss frontier; making a total loss of 187,000, as against 15,000 inflicted on the Germans.

Battle on the Lisaine.—Perhaps the most remarkable of these encounters, if discrepancy in the numbers of the contending armies be considered, was the Battle on the Lisaine on the 15th, 16th, and 17th January, 1871, between the forces of Von Werder and Bourbaki.

Bourbaki's army consisted (approximately) of 120,000 men and 320 guns. To oppose him and, at the same time, cover the siege of Belfort, which contained a garrison of 17,000, Von Werder had but 45,000 men and 146 guns. The latter General took up a position, carefully prepared for defence by entrenchments, &c., along the River Lisaine, which runs from north to south 5 or 6 miles to the west of Belfort. His right was at Chenebier, his centre at Héricourt, and his left at Montbéliard.

On the morning of the 15th January, Bourbaki attacked Montbéliard with the 15th Army Corps, and Héricourt with the 20th and 24th Corps. He appears, however, to have attached the chief importance to a flank movement which he had directed the 18th Corps and the Division Crémier to make against the German right; and by which he hoped that the enemy's line might be turned. But here the absence of order and discipline amongst the French Officers and Staff made itself felt, and prevented the fulfilment of Bourbaki's scheme.

The French Commander-in-Chief drew special attention in his orders to the necessity of the different columns keeping clear of each

other; and he expressly directed Cr  mer to follow the direct route from Lure to H  ricourt for as short a time as possible, so as to avoid coming into collision with the left of the 18th Corps, and Bourbaki further added that, with this object in view, Cr  mer was if possible to leave the road in question before reaching Beverne, and that he was to subordinate his action to that of the 18th Corps. Nevertheless, in order to facilitate his own advance, General Cr  mer used the H  ricourt high road for a considerable distance, and thereby, after crossing the line of the rearmost Division of the 18th Corps at Lyoffans, came into collision at Beverne with the left wing of the same corps. Earlier in the night the Divisions of the 18th Corps also came into collision with each other.

The result of this failure to carry out the Commander-in-Chief's orders was that great loss of time and confusion were occasioned in the execution of the general movement; and eventually the troops did not arrive in front of Chagey until nearly 2 P.M. on the 15th January instead of 6 A.M., which was the hour named by Bourbaki.

It was then discovered that the assumption that the right of Von Werder's line could be turned by a march on Chagey was erroneous, and that, as the position of the defenders extended further north, a longer *d  tour* must be made.

The series of mishaps which attended this flank movement were, in part, attributable to the severe weather and to the half-starved condition of the French troops, which rendered them incapable of rapid marching; at the same time, it can scarcely be doubted that if the discipline amongst the commissioned ranks of the French Army had been equal to that of their opponents, much delay and fatigue would have been avoided; and hence that the chances of success would have been materially augmented.

On the 16th the French succeeded in capturing Chenebier, but made no attempt to follow up their success; and three attacks were also directed against H  ricourt, but without any result; and the French infantry opposite Montb  liard remained passive throughout the day.

Before daybreak on the 17th January the Germans surprised the French troops occupying Courchamp, a village near Chenebier, and recaptured the village. During the day Bourbaki made a general attack along the whole line, but was defeated at every point; and he thereupon determined to abandon further offensive operations, and he accordingly withdrew his army on the next day.

The losses of the French in the three days' fighting amounted to nearly 8,000 men, those of the Germans to but 1,646.¹

The French soldiers who took part in the Battle on the Lisaine had little discipline, and their Officers, both Staff and regimental, appear, as a rule, to have been as deficient in this respect as their men.

The troops were rendered even more inefficient than would other-

¹ "The Franco-German War;" translated from the German official account by Major F. C. H. Clarke.

wise have been the case by the hardships to which they were exposed. In several instances, whole Divisions were kept without fires and under arms throughout the night, from an exaggerated fear of surprise; and it is difficult to believe but that, if the confidence and mutual reliance which arises from discipline had existed through all ranks, much of the suffering thus inflicted would have been avoided.

In conclusion, it may be remarked that whereas in the perfectly disciplined German Army all ranks contributed to the utmost in carrying out their General's plans, the fighting of the French, on the contrary, was to a great extent dependent on the Commander-in-Chief's presence, a sure sign that discipline in its highest form did not exist. The consequence of this was that the French attacks were made without combination, and in a desultory and half-hearted fashion, that a lack of enterprise was shown, as in the failure to follow up the attack on and capture of Chenebier, and, finally, that the plans of the French General failed as much from lack of concert in their execution as from any other cause.

2. *Steadfast Courage of Disciplined Troops, and Liability to Panic of Undisciplined Troops.*

EXAMPLES: (a.) *Battle of Plassey*.—Passing to the second characteristic which distinguishes disciplined over undisciplined troops, I venture to think that history contains no more splendid example of disciplined courage as opposed to undisciplined panic than the advance of Clive to Plassey with his miniature army on the 22nd June, 1757, and the disordered retreat before him of the hosts of Suraj-u-Dowlah on the following day.

The Anglo-Indian Army took up their position late in the evening in a mango grove near Plassey, and within a mile of the enemy. Clive's total force only numbered 3,000 men, of whom but 1,000 were Europeans, principally men of the 39th Regiment, the remainder being sepoys disciplined in the English manner, and commanded by English Officers. His artillery was limited to eight field-guns.

At daybreak, on the 23rd June, the hordes of Suraj-u-Dowlah poured forth from their camp to the number of about 60,000 men, of whom 15,000 were cavalry. There were also fifty pieces of artillery mounted on travelling platforms, and drawn by oxen; and Suraj-u-Dowlah had in addition four field-guns equipped in European fashion, and served by forty French gunners. His cavalry was composed of men from the north of India well armed, well mounted, and brave; but in this formidable force "the bond of discipline was wanting, and placing no reliance one upon another their very multitude became to them a source of weakness."¹

The Nabob's artillery began the battle with a noisy but ineffectual cannonade, the guns being badly served. The fire from the English artillery produced such a moral effect on the crowded masses of Indians, that Clive soon discovered that his guns alone were sufficient

¹ Rev. G. R. Gleig: "Life of Robert, First Lord Clive."

to keep his cowardly enemy in check. Owing, however, to the smallness of his force, he did not as yet deem it prudent to assume the offensive. About noon, a heavy shower of rain damaged the ammunition of the enemy's artillery to such an extent as to render their guns almost useless; and, at about the same hour, a cannon ball from the English guns mortally wounded Meer Murdeen, one of the best and most trusted Officers in Suraj-u-Dowlah's service.

This event induced the Nabob to order a general retreat, a manœuvre which all ranks of his army were apparently very ready to execute. Soon the mighty host, having sustained a loss of but 500 men, and having slain only 22 of its opponents, was retiring in ignominious flight before the British force, which it outnumbered by twenty to one, and with which it had never dared to come to close quarters. As if still further to accentuate the courage of discipline, the little band of forty French artillerymen now alone held their ground, and ventured for a few minutes to confront the conquerors of an army of 60,000 men; but they were sharply attacked, and quickly compelled to abandon their guns, and join in the general flight.¹

At the Battle of Plassey, no doubt other influences beyond want of discipline contributed to produce panic in the ranks of the vanquished; as, for example, their entire want of tactical skill, the absence of any organization however rough, and the fact that the conquerors belonged to a dominant race, and hence had the advantage conferred by prestige. It will be seen, however, from the examples which follow, that if the discipline of a well-organized European army becomes even temporarily affected, it at once becomes liable to panics as disgraceful as those which characterize the disorderly rabbles of Eastern potentates.

(b.) *Encounters between Austrians and French in April, 1792.*—Thus, at the beginning of the Campaign of 1792, it is admitted by all writers on the subject that, owing to the general subversion of all authority at the Revolution, and from other causes of which I shall speak later, discipline had almost ceased to exist in the French Army. In April of that year, Tournay was held by the Austrians, and about the 28th of that month, General Dillon advanced with 4,000 French troops from Lille to Bessieux, with the intention of seizing Tournay. His advance was covered by his cavalry, of which he appears to have had a considerable force.

About 900 Austrians of the garrison of Tournay showed themselves on the approach of the French, but without, it is said, firing a single shot. The sight of their enemies even was more than the latter could stand. The French cavalry, who were in front, uttered frantic cries of terror, and immediately galloped back to Lille, followed by the rest of the army; all the artillery and baggage being abandoned to the Austrians.

Dillon followed his cowardly soldiers back to Lille, and was murdered by them in the streets of that town, his Commanding Engineer, Berthois, being killed at his side; and their lifeless bodies

¹ Compiled from "Life of Robert, First Lord Clive," by Rev. G. R. Gleig, and "Life of Lord Clive," by Sir J. Malcolm.

were treated with horrible indignity.¹ Thus the French troops sought to avenge on their leaders the want of confidence in themselves, which arose from the absence of discipline from their ranks; and thus barbarous cruelty, as well as contemptible cowardice, quickly followed in the steps of indiscipline.

The above was by no means an isolated example. Disgraceful panics of a similar character continued to be frequent during this campaign, until discipline had once more been established in the French ranks by Dumouriez, and by other Generals brought forth by the Revolution. Then the remarkable spectacle was presented to the world of the same soldiers who, when without discipline, had fled in abject terror at the approach of an enemy, marching in triumph from one end of Europe to the other, after gaining some of the most brilliant victories of modern times.

Again, in the Peninsular War the half-disciplined Spanish troops were utterly unreliable, and frequently displayed the grossest cowardice. I will quote but one instance out of many which might be given.

(c.) *Battle in the Somosierra*.—On the 30th November, 1808, 12,000 Spaniards, under St. Juan, were skilfully posted in a very strong position in the Somosierra. Napoleon, who appears fully to have understood the troops he had to deal with, ordered two or three squadrons of Polish Lancers to charge up the pass, the ascent of which was very steep. Thereupon the Spanish troops fired one volley and fled, leaving guns, ammunition, and baggage. "It is almost incredible," says Sir William Napier,² "that a position nearly impregnable, and defended by 12,000 men, should, from a deliberate sense of danger, be abandoned to the wild charge of a few squadrons which two companies of good infantry would have effectually stopped." The peculiar untrustworthiness of badly disciplined troops was well exemplified on this occasion, as a portion of the Spanish Army then engaged had previously been victorious over the French.

As if to complete the picture of their undisciplined cowardice, the Spanish troops who had thus shamefully fled afterwards murdered their General, and fixed his mangled body to a tree.

Passing to a more recent period, it will be found that somewhat similar instances of unreasoning panic frequently occurred amongst the raw and undisciplined levies with which the French Republic attempted to check the German invasion during the latter part of the Campaign of 1870-71.

(d.) *Engagement between Germans and French Garde Mobile in November, 1870*.—On the 26th November, 1870, whilst Garibaldi's Division was engaged with the Germans near Dijon, the French Garde Mobile who were in reserve were so terrified by the sound of rifle bullets passing over their heads, that although not a man was hit, yet they either threw themselves flat on the ground, or took refuge in the neighbouring ditches. So blind was their terror that, in prostrating

¹ Lamartine: "History of the Girondists." Long: "France and its Revolutions."

² "History of the War in the Peninsula."

themselves, they wounded each other with their bayonets, which were fixed, thus adding to the disorder.

After a time they were persuaded to rise, but immediately on doing so they loaded their rifles contrary to their orders, and opened fire; and as the Mobiles were in reserve, and therefore had a line of their own friends at some distance in front of them, these received the full effects of the discharge.

The French fighting line had, up to this time, maintained the contest with the Germans with courage; but finding that they were now being fired at from the rear, they very naturally imagined that the enemy had penetrated between them and their reserves, and they began to retreat with a view to rejoining the latter. The sight of these men running towards them proved the last straw to the Garde Mobile; they "turned tail and fled. Persuasion and menaces were alike powerless to bring them back. When kind words had failed, the Officers of the Staff drew their swords, and struck them over the back with the flat part, but the cowardly mass dodged them, and fled into the fields."¹ As a consequence of this panic, the whole army was compelled to fall back. Yet this cowardly rabble belonged to a nation whose soldiers, when acting with the mutual reliance arising from discipline, have invariably proved themselves to be as brave, perhaps braver, than any in the world.

On the other hand, on the rare occasions during this campaign that the perfectly disciplined German troops were compelled to fall back before the French, their retreat was characterized by the most admirable coolness, and they availed themselves of every advantage of ground to check pursuit. An example, on a small scale, of this occurred during the operations in which the panic of the Mobiles above described formed an episode.

A portion of the German force was retiring, and a detachment of the 7th Chasseurs d'Afrique started in pursuit, and attempted to press on the retreat. This being observed by the retreating Germans, a party of their infantry took up a position behind a wall, outside the village of Prenois, which the French cavalry were obliged to pass. The German infantry coolly waited until the latter were within a few yards of them, and then poured three volleys into the ranks of the cavalry in rapid succession, and thus dismounted a considerable number, and threw the rest in confusion.

(e.) *Campaign of 1877: Unreliable Behaviour of Turkish Irregulars.*—Passing to the Russo-Turkish Campaign of 1877, it appears that the conduct, in the presence of the enemy, of the undisciplined bands of irregulars attached to the Turkish armies was always untrustworthy in the extreme. Great personal bravery and disregard for danger were no doubt frequently exhibited; and individual Circassians would ride up and down alone within view and fire of an advancing Russian force, would discharge their rifles at the approaching enemy with the utmost coolness, and would finally retire after treating their foes with perfect indifference. This admirable behaviour, however,

¹ War correspondence of the "Daily News."

was by no means maintained by the Circassians if required to act together in large bodies; for when this was the case they were most unreliable, and could not be trusted in front of the Russian regular troops; a similar untrustworthiness characterized the conduct of the other irregulars who acted with the Turks. During the engagement between the Turks and Russians near Boditzka, General Valentine Baker attempted, pending the arrival of the Turkish regular troops, to utilize some Bashi-Bazouks, in order to check the Russian advance. With this object in view he posted these men along the edge of a wood. As soon, however, as "the bullets of the Cossack skirmishers began to fall amongst us, the cowardly wretches bolted to a man, and rushed off along the road in the direction of Kovatza."¹

Yet these men were simply armed civilians of the same race as the regular Turkish troops, who throughout the campaign withstood the Russian onslaughts with valour and determination, and hence their cowardice must be attributed to their want of discipline alone.

Danger of Excess of Undisciplined Valour.—Before leaving this part of the subject, it may be remarked that an excess of undisciplined valour may lead to results as disastrous as those which have flowed from undisciplined panic. This is especially the case when troops have been induced to follow up a temporary success with too great impetuosity and without support.

Opinion of the Duke of Wellington.—In commenting on an incident of this kind, the Duke of Wellington remarks: "The undisciplined ardour of the — Dragoons and — Regiment of Portuguese Cavalry is not of the description of the determined bravery and steadiness of soldiers confident in their discipline and in their Officers. Their conduct was that of a rabble, galloping as fast as their horses could carry them over a plain, after an enemy to whom they could do no mischief. . . . I add my entire conviction that if the enemy could have thrown out of Badajoz only 100 men, regularly formed, they would have driven back these two regiments in equal haste and disorder."²

3. *Attention to Details, &c., of Disciplined Troops, and Carelessness of Undisciplined Troops, contrasted.*

I will now proceed to the third point at which disciplined troops have shown themselves to be superior to undisciplined armies.

It is obvious that there can be no regularity or method if order and subordination are wanting, and many instances can be quoted of failure and disaster the fruits of the neglect of detail and general carelessness which, together with actual disobedience, are usually displayed by undisciplined troops.³

¹ "War in Bulgaria," by Lieut.-General Baker Pasha.

² "Despatches and General Orders of the Duke of Wellington," by Lieut.-Col. Greenwood.

³ The examples which follow are selected from Napier's "History of the Peninsular War," Adam's "Great Campaigns," "Franco-German War" official account, Hozier's "Russo-Turkish War," General Valentine Baker's "War in Bulgaria," Journals of the R.U.S.I., &c.

EXAMPLES : (a.) *Operations of French Army under Duhesme in 1808 in the Peninsula.*—In 1808 the French Army in the Peninsula consisted, with the exception of a few battalions, of raw and undisciplined levies; the consequence of which was that their operations were attended with frequent checks and failures which resulted from carelessness and want of precision in their execution.

These failures cannot be attributed to any neglect on the part of Duhesme, who was in command, for we have the evidence of Napoleon that he was an Officer of great energy and intelligence.

On the 3rd of June, 1808, a force of 3,000 men marched from Barcelona with the intention of moving to Mauresa. It was well known that the "Somatenes" or armed peasants were assembling in great numbers in the neighbourhood, yet the column marched without an advanced guard or military precautions of any kind, with the obvious result that the French troops were surprised by the peasantry at the Pass of Bruch, and narrowly escaped destruction. A few weeks alter the assaults on Gerona were repulsed owing to the omission to carry scaling ladders, and to the confusion in the French attacking columns.

(b.) *Incidents during Retreat of British Army on Coruña.*—During Sir John Moore's retreat on Coruña, at the end of the same year, dislike to retreating and bad weather combined to seriously impair the discipline of the British Army, and a general indifference and carelessness at once became apparent amongst both Officers and men.

When he found that it was necessary to change the direction of his march from Vigo to Coruña, Sir John Moore despatched orders to that effect by an aide-de-camp to one of his subordinate Generals. The latter, although he well knew the vital importance of these orders, yet passed them on to General Fraser by a private dragoon who got drunk and lost the despatch. The carelessness by which orders of such moment were entrusted to so unreliable a messenger had a disastrous result. Fraser remained in ignorance of the change of plan for several days, and hence performed a toilsome and unnecessary march during which he lost more than 400 men.

During the same retreat an Officer was placed in charge of some cars loaded with dollars to the value of 25,000*l.* The bullocks dragging this treasure had become exhausted, and the Officer in charge of it was told where fresh teams could be procured; but here again the fatal consequences which result from the absence of the highest form of discipline made themselves felt. The Officer, indifferent to his duty, neglected to obtain fresh cattle, and hence the treasure had to be abandoned to the enemy very shortly afterwards.

(c.) *Double Retreat of the Anglo-Portuguese Army from Burgos and Madrid in 1812.*—Again, in the autumn of 1812, the double retreat of the Anglo-Portuguese Army from Burgos and Madrid produced the usual effect on discipline, which in most regiments became very defective.

Soon after one column had left the Tagus, a number of men of the rear-guard, which was commanded by Cole, contrived to stray away from the ranks, and breaking into the cellars at Valdermoro became

hopelessly drunk; in this condition 250 of them were captured by the French.

In November the line of retreat lay near the Matilla stream, through a forest containing large droves of pigs.

In spite of positive orders to the contrary, hundreds of soldiers quitted the ranks to shoot these animals; the Army being thus placed, to a certain extent, at the mercy of the French. Fortunately the latter did not press the march of the Allies, but contented themselves with capturing the stragglers, of whom in a short time they took more than 2,000 prisoners.

The advantages conferred by discipline were remarkably illustrated during this retreat; for whilst on the one hand, owing to the above-described and other irregularities, the French captured altogether more than 3,500 prisoners; on the other hand, the Guards and Light Divisions, which had preserved their discipline, held well together and scarcely lost thirty men beyond those killed in battle.

The foregoing are examples of wide-spread indiscipline and its results, but the irregularities of individuals, even, may be fraught with disastrous consequences.

(d.) *Incident during Campaign of 1813.*—In July, 1813, the French Army, under Soult, had halted at San Estevan, in a deep, narrow valley, and in a few hours would have been completely surrounded by the Allies, and compelled to surrender. All that was necessary for the success of this plan was that Soult should be kept in ignorance of the proximity of the enemy. With this object the Duke of Wellington gave strict orders against straggling: but at the critical moment three marauding English soldiers strayed near the French camp, and were promptly made prisoners.

Thus warned, the French speedily beat to arms, and within half an hour of the alarm being given, Soult's columns began to march out of San Estevan. "Thus the disobedience of three plundering knaves, unworthy of the name of soldiers, deprived one consummate Commander of the most splendid success, and saved another from the most terrible disaster."¹

(e.) *Irregularities of Spanish Troops in Peninsula.*—During the whole course of the Peninsular War, the native Spanish armies were utterly without discipline, and hence their manœuvres presented the spectacle rather of a burlesque than of serious military operations.

The simplest precautions were systematically disregarded, and nothing appears to have interested the Spaniards less than the movements, numbers, and intentions of their opponents. They firmly declined to fight, or perform any other military duty, except at times and places agreeable to themselves; and whilst, on the one hand, they never gave information to their own Generals, on the other, every movement of the Spanish troops was well known to the French. In 1809, Bernardin Freire took command of a Spanish army of 15,000 men at Braga, and attempted to establish outposts and also to check the habit, which existed amongst the Spanish soldiers, of firing

¹ Napier's "History of the Peninsular War."

off their ammunition when walking about the streets and roads. These reforms were regarded as an unwarrantable interference with the liberty of the subject, and the offending General was promptly put to death by his soldiers.

To add to their other enormities the Spanish cavalry, in August, 1809, captured the supplies destined for their English allies, and actually shot down the foragers as if they had been the enemy.

The result of all these disorders and irregularities was that the Spanish troops blundered from one disgraceful disaster to another, nothing being regular in their operations except the recurring defeats.

(f.) *Operations of British Light Division in Peninsula in 1810.*—It will be found that the behaviour of the men of the perfectly disciplined English Light Division presented a remarkable contrast in every particular to that of the Spaniards. "Long and carefully disciplined by Sir John Moore, they came to the field with such a knowledge of arms, that six years of warfare could not detect a flaw in their system."¹

In 1810, General Cranford with the Light Division, reinforced by other troops to about 4,000, watched the line of the Aqueda from Escalhon on the left to Navas Frias on the right—a distance of nearly 25 miles. Yet—although there were only about 170 men available to watch each mile of front—they never allowed themselves to be surprised; and this notwithstanding the fact that, owing to sudden changes of level, the Aqueda formed a most unreliable barrier, as it would frequently, in a single night, become fordable at places previously impassable. This peculiarity rendered it often necessary that the outposts should be concentrated; and so marvellous are the order and precision produced by discipline, that a quarter of an hour sufficed for the troops to form up in order of battle at the alarm posts with baggage loaded in rear in readiness for immediate movement.

(g.) *Novara Campaign of 1849.*—The Novara Campaign of 1849 affords an apt illustration, both of the advantages conferred by the existence of a perfect and willing discipline amongst the higher ranks of an army, and of the miscarriages and failures which necessarily flow from the absence of such discipline.

The Austrian Commander-in-Chief, Count Radetzky, although 82 years of age, still possessed considerable activity, both mentally and physically. An agreeable and even fascinating manner, added to the devotion and respect which his great age and long and distinguished career in the Austrian Army naturally excited, and the existence of such sentiments amongst all ranks, was a sure guarantee of the existence of discipline.

The Commander-in-Chief of the Sardinian Army had the misfortune to occupy a position differing from that of Radetzky in every respect. A Polish adventurer, and only appointed to command the Sardinian forces at the beginning of the campaign, Chrzanowsky had all the obstacles to contend with which naturally present themselves in the path of a foreigner and stranger suddenly raised to such a

¹ Napier's "History of the Peninsular War."

position. Ignorant of the character—of the language even—of his subordinates, Chrzanowsky's difficulties were further increased by the resentment naturally entertained against him by the numerous Officers who had been superseded by his appointment. Every order issued by him was severely criticized, and, if possible, disobeyed, or at most unwillingly and grudgingly carried out.

The Sardinian Army numbered 85,000 men with 150 guns, and was divided into seven Divisions and two independent brigades. Chrzanowski determined to invade Lombardy and occupy Milan; and he accordingly massed five Divisions and a brigade between Novara and the Ticinus; and a sixth Division, under La Marmora, was ordered to move on Parma so as to be able to co-operate with the main army if it should continue its advance to the Mincio. Chrzanowski foresaw that it was possible that the Austrians would themselves attempt to invade Piedmont, and that, in such a case, they would probably attempt the passage of the Ticinus at Pavia; and he therefore ordered a Division, under command of Ramorino, to take post at La Cava, which is situated on heights near the river bank, and opposite Pavia. These heights were capable of being strongly defended, and would directly obstruct the advance of the invading columns.

If no hostile movement was perceptible Ramorino was, if possible, to capture Pavia; but if the Austrians attempted to debouch from Pavia into Sardinian territory, Ramorino was ordered to stoutly oppose them; and if compelled to fall back he was to retire upon Mortara or San Nazzaro, whence he could regain communication with the other Divisions who would be warned by the firing. Ramorino, however, entirely disregarded these orders and remained inactive with his Division on the south bank of the Po.

What Chrzanowsky believed to be possible actually took place.

On the 20th March, Radetzky invaded Sardinian territory by way of Pavia with 68,000 men, and, owing to the disobedience of Ramorino, he was able to carry out, unopposed, the critical and dangerous undertaking of crossing the frontier river.

On the following day the absence of discipline amongst the higher ranks of the Sardinian Army again produced evil results.

Chrzanowsky on hearing of the passage of the Ticinus by the Austrians ordered two Divisions, under Durando and the Duke of Savoy, to occupy Mortara. Durando was directed to take up a strong position about three miles in advance of the town, whilst the troops under the Duke of Savoy were to be in reserve. Durando disobeyed these instructions, and occupied a position only one mile from Mortara; his only line of retreat thus passed through the streets of that town. The reserve could only move forward to his support through the streets of Mortara; and hence, when Durando was compelled by the Austrians to retire on the 21st March, his troops in falling back blocked the advance of the Duke of Savoy and prevented his occupying Mortara. The Duke was therefore compelled to withdraw the reserve, and abandon the town to the Austrians.

Mortara was the key of Chrzanowsky's line of communication

with his base at Turin; and its occupation by the enemy, which was due to the disobedience of Durando, seriously compromised the whole Sardinian Army. With the careless indifference of indiscipline neither Durando nor Savoy made any report of their defeat to their Commander-in-Chief, and the latter learnt by accident of a combat which had vitally influenced the whole campaign. Whilst in the Sardinian Army the insubordination and disobedience of the Generals were thus bringing the plans of the Commander-in-Chief to naught, on the side of the Austrians, on the contrary, the discipline of all ranks left little to be desired; and the contrast between the contending armies in this respect mainly contributed to the final overthrow of the Sardinians a few days later at the Battle of Novaro.

(h.) *Campaign of 1870.*—The discipline of the German Army in 1870 had reached the highest possible standard, the result of long years of national training and self-denial. The vulgar forms of insubordination, such as have been previously described, were almost entirely absent; and owing to the high pitch of intellectual discipline which prevailed, all ranks had but one object in view, the successful issue of the operations in which the armies were engaged. This sentiment being the mainspring of their actions, each Officer, non-commissioned officer, and soldier exerted himself to the utmost; and was ready, if necessary, to sacrifice himself in the fulfilment of his duty. Hence the advance of the German hosts into France in the summer of 1870, and their subsequent operations in the seven months' campaign which followed, must always be quoted as splendid examples of the triumph of disciplined force.

The perfect regularity and precision which spring from a disciplined attention to detail in the execution of all operations, coupled with the zealous spirit of duty which pervaded all ranks, enabled the German Commanders to count, with the certainty of a chess-player handling his pieces, on the support in their plans of the most distant portion of the army.

The methodical precision which characterized the German operations was the more striking from the fact that it existed side by side with a marked spirit of enterprise and daring. Thus at the beginning of the campaign a Staff Officer with a patrol made his way through the French outposts near Lauterberg, and explored a considerable tract in rear. Eventually, after examining the district for thirty-six hours, the party encountered a superior French force, when at a distance of 10 miles in rear of the French outposts, and sustained some loss. The Staff Officer in charge, however, escaped to the 3rd German Army, with the important intelligence that no large body of French troops existed between Lauterberg and Woerth. Later, a few Uhlans boldly occupied the hostile and important town of Nancy; and although they numbered but thirty men in the presence of thousands of French inhabitants, they seized the railway station, and tore up the rails for some distance, thus inflicting great inconvenience on the enemy.

The above are but two out of many examples which might be

quoted of the daring spirit of enterprise and untiring watchfulness displayed by the German cavalry throughout the campaign.

Space will not allow of my dwelling on the great operations which followed these preliminary enterprises, and from which many lessons on the importance of discipline might be gleaned. The conduct of the campaign by the Germans was throughout remarkable for the same characteristic completeness and precision, and on the very few occasions that a joint in the armour of their discipline became visible, the defect almost invariably arose from excess of zeal; as, for example, the loss of control over the supports at the Battle of Gravelotte, and their disordered advance and entry without orders into the fighting line.

On the side of the French, whose discipline had been admitted by General Trochu and others to be most defective, all operations were remarkable for neglect of detail and general carelessness, sure precursors of failure and miscarriage. This was specially observable during the disastrous march to Sedan. "The execution of the movement was execrable. Hesitation on the part of the Commanders reigned everywhere; orders and counter-orders followed unaccountably; the direction of the march was too often changed; care for supplies was unattended to; the movement itself was not definitely marked. The first two marches were excessive, the others puny, and throughout the exposed flank was not covered; while owing to the ignorance of topography displayed, the order of march was not maintained; and, lastly, outpost duty was utterly neglected."¹

(i.) *Campaign of 1877.*—Before leaving this portion of the subject it will be well to speak briefly of the Russo-Turkish War of 1877. Large bodies of Circassians and other undisciplined irregulars attached themselves to the Turkish armies at this time, and it might have been supposed that the habits and disposition of these men would have rendered them invaluable for scouting. Such would doubtless have been the case if they could have been properly disciplined; but owing to the fact that, like the Spanish levies in the Peninsula, they would only carry out their military duties when and where they pleased, it was found that their presence with the armies of the Sultan was worse than useless.

A whimsical illustration of the careless manner in which these irregulars performed the duties allotted to them was afforded during the passage of the Russians across the Balkans in July, 1877. The Turks, apparently believing that a Russian advance along this line was possible, had posted some companies of Nizams at the entrance to the Hainkoi Pass. These troops were encamped in a valley, and by way of outposts had stationed a party of mounted Bashi-Bazouks on a height in advance of their camp.

On the Russians moving forward, they were observed by the Bashi-Bazouks, who thereupon rode off in another direction, without attempting to warn the Nizams of the approaching danger. The consequence of this was that the Turks were surprised in their

¹ Adam's "Great Campaigns."

tents, and their camp with stores and baggage was easily captured by the Russians.

Owing to the above incident the passage of the Balkans on the Hainkoi line was accomplished by the latter without loss.

4. *Effect of Discipline in preventing Barbarities against Inhabitants of Theatre of War, and results of such Acts if allowed.*

I will now give a few illustrations of the barbarities which invariably attend the operations in the field of undisciplined bodies of men, and of the evil results which react therefrom on the cause of the perpetrators.¹

EXAMPLES: (a.) *War in America in 1777.*—General Burgoyne, who commanded the British forces in America in 1777, had, in an unlucky moment, enlisted the services of several tribes of Red Indians. During the summer of that year the operations of the British Army had been attended with remarkable success, and a belief began to prevail both in England and in America that the American Colonists would soon be compelled to lay down their arms. At this time the employment of Indian allies produced a most evil effect, and contributed in no small degree to the sudden change which was about to pass over the face of affairs.

In spite of the exertions of Burgoyne, the Indians, who were under no sort of discipline, habitually committed the most horrible atrocities; and it is said that, in some cases at least, American loyalists, as well as persons hostile to the British cause, were the victims of these excesses. The accounts of the massacres perpetrated by these savage auxiliaries were widely circulated amongst the Colonists, and naturally gave rise to a feeling of desperation which reacted disastrously on the fortunes of the British forces, and mainly brought about their overthrow. "The inhabitants of the open and frontier countries had no choice of acting; they had no means of security left, but by abandoning their habitations and taking up arms. Every man saw the necessity of becoming a temporary soldier, not only for his own security, but for the protection and defence of those connections which are dearer than life itself. Thus an army was poured forth by woods, mountains, and marshes, which in this part were thickly sown with plantations and villages. The Americans recalled their courage; and when their regular army seemed to be entirely wasted, the spirit of the country produced a much greater and more formidable force."²

(b.) *War in the Peninsula.*—Throughout the Peninsular Campaign the behaviour of the French troops, the standard of whose discipline was usually not high, towards the inhabitants of the theatre of war was characterized by an excessive harshness and brutality which

¹ The following is compiled from—Creasy: "Fifteen Decisive Battles of the World." Napier: "History of War in Peninsula." Gurwood: "Despatches of Duke of Wellington." "Franco-German War:" Official account. Hozier's "Russo-Turkish War," &c.

² Burke.

rendered Napoleon's system of forced requisitions even more unbearable than would otherwise have been the case.

The oppressions which the invaders inflicted rendered them the object of the deadly and vindictive hatred of the Spaniards, who retaliated on the French at every favourable opportunity.

The night before the surprise of the latter at Aroyo Molino, every Spaniard in the neighbourhood knew that the Allies under Hill were approaching to attack the French, and might have profited by betraying their advance to the enemy. The detestation excited by the cruelties perpetrated by the French caused the secret to be rigidly kept, and the latter were completely surprised by the Allies and only 600 out of 3,000 escaped.

General Order by Duke of Wellington in July, 1813.—The Duke of Wellington, in a General Order of the 9th July, 1813, attributed the misfortunes which had then overtaken the French to the cruelties which they had inflicted on the inhabitants of the country during their invasion of Spain and Portugal; and there seems to be no doubt that there were considerable grounds for this assertion. On the other hand, certain of the French Generals sometimes succeeded in abating the cruelties practised by their men, by enforcing a higher standard of discipline, and in such cases the result was always beneficial to their military operations. Thus, early in 1809, Soult having adopted a humane and conciliatory attitude towards the inhabitants of Ribidavia, they soon began to return to their houses; and the reprisals against the French arising from the hostility of the peasantry were greatly reduced, whilst at the same time the supply of Soult's troops was rendered easier.

Again, acts of hideous cruelty perpetrated during the storming of Oporto, by the undisciplined defenders, were followed by a prompt and terrible retribution. The French troops on entering one of the principal squares found several of their comrades, who had been made prisoners, bound, and though still alive, with their eyes burst and their tongues torn out. This sight excited a furious rage against the Portuguese amongst the French troops, and in spite of Soult's efforts to stop the carnage, 10,000 Portuguese were slain, whilst the loss of the French did not exceed 500. So eminent an authority as the Duke of Wellington has left numerous records in the shape of general orders and memoranda, that it was his conviction that discipline in an army alone can prevent outrages against the persons and property of the inhabitants of the theatre of war; and, further, that such irregularities invariably lead to the most serious misfortunes. Previous to the advance of the Allied Army into France, the Duke issued an order warning his troops against molesting the inhabitants.

(c.) *Advance of Allied Army under Duke of Wellington into France in 1813-14.*—In November, 1813, however, the Spanish troops, whose discipline appears to have been always bad, availed themselves of the opportunity for marauding; and the French inhabitants, terrified at their excesses, fled from their district; but Wellington was determined to check these outrages at all costs, and his measures with this

object were promptly taken and sternly enforced. He caused all the Spanish marauders who could be captured in the act to be put to death; and although sore pressed for men and daily expecting a battle, he ordered the whole of the Spanish troops to retire from France to their own country.

This decisive and far-seeing policy quickly restored confidence to the French; they returned to their homes, and the good feeling which was thus excited materially facilitated the further operations of the British Army on French territory.

The discipline of the Duke of Wellington's troops during this campaign contrasted very favourably with that of their opponents; and the result was sufficiently striking, for the Duke was able to state, years afterwards, before a Royal Commission, that the French civil population "came home to their houses when the English were to occupy them, having left them when the French were to occupy them!"¹

(d.) *Invasion of France of 1870.*—More than half a century later French soil was again to resound to the tramp of an invading host, moving with the irresistible force of perfect discipline; again were proclamations issued by the chiefs of the invading armies, warning their soldiers against the excesses which have so often disgraced the operations of war; again were the orders of the Generals to find so ready a response from their soldiers, that the spectacle was presented of the inhabitants of the theatre of war dreading the presence of their defenders rather than that of the enemy; and again was an honourable humanity to be rewarded by splendid and well-earned success. Throughout the Campaign of 1870-71 the behaviour of the German troops towards the civil population of the invaded provinces was beyond all praise, and the aspect presented by French towns, during the passage through them of the German invaders, was thus described by an eye-witness. "They do not suffer any of what are technically termed the 'horrors of war.' Young girls stand at the cottage-doors in the villages, or at the street corners in the towns to see the soldiers pass, and are not injured by them. Shops are open in the towns and are not plundered; peaceable citizens go about their business without fear for life or limb."²

When staying in France ten years after the conclusion of the campaign I heard the following related by a French lady, who vouched for its truth. A detachment of German troops had occupied a small French town lying at no great distance from the Channel, and some of the men were billeted on a friend of my informant. During the absence of his comrades one of these soldiers demanded the key of the wine-cellar from the lady of the house, who refused his request; and he thereupon threw her down, and was about to offer further violence when a German Officer fortunately arrived on the scene. The offender was at once made a prisoner, was tried by court-martial, and was shot next morning.

The fact that such testimony in their favour could be given by a

¹ "Wellington Despatches."

² War correspondence of the "Daily News."

hostile witness speaks volumes for the conduct of the German troops. Their disciplined forbearance brought its own reward, and the conviction which soon prevailed amongst the French inhabitants, that they were safe from outrage, provided they abstained from molesting the unwelcome intruders, contributed in no small degree in rendering the task of the Germans less difficult. Who can doubt that, if their path had been marked by cruel outrages and wanton oppression, the difficulty of communicating with and supplying the various parts of their vast and wide-scattered army would have been greatly increased by the active hostility of the inhabitants: and, further, that at the Lisaine and elsewhere the French levies would have been swelled to double the actual numbers by recruits, forced to fly from the occupied provinces, and imbued by the courage of despair by the loss of all that men hold dear?

It is, also, at least possible that, if needless cruelties had been inflicted on the French by their conquerors, a feeling of sympathy might have been excited amongst the other nations of Europe, and a disposition aroused to deny, in some measure, the fruits of their victories to the Germans.

(e.) *Campaigns of 1876-77.*—The operations of the irregulars employed by the Turks in 1876-77 afford an illustration of the barbarities which are usually practised by undisciplined bodies, and of the disadvantages which recoil therefrom on the cause of those whom they serve.

The revolting outrages perpetrated by the Circassians and Bashi-Bazouks on the inhabitants of Batak and other towns and villages, during the suppression of the rising in Bulgaria, estranged the sympathies of Europe from the cause of the Sultan, and brought the whole Turkish Army into great and ill-merited disrepute. In the campaign against the Russians which followed the rising in Bulgaria, Circassians, Bashi-Bazouks, and Kurds maintained their reputation for cold-blooded and purposeless ferocity, and it is probable that more would have been heard of their enormities, if their opponents had been altogether blameless in such matters. The employment, however, by the Russians of undisciplined hordes, who were guilty of similar crimes, rendered them unable to reap the great political capital which would have accrued to them if they could have held up their opponents to reprobation, in the negotiations which followed the conclusion of the campaign.

It may, perhaps, be remarked that between 1757 and 1877, several well-known instances occurred in which undisciplined bodies of men achieved signal triumphs over regularly disciplined troops. If the surrounding circumstances, in such cases, be carefully examined, it will almost invariably be found that the latter were either enormously outnumbered or were placed by peculiarities of ground at a great disadvantage as regards their antagonists.

Circumstances which have sometimes led to the Defeat of Disciplined by Undisciplined Armies.—Napoleon was of opinion that the power of disciplined troops was superior to that of undisciplined bodies of men in the ratio of three to one; or in other words, that a regular army

of, say, 5,000 soldiers ought to hold its own against 15,000 irregulars. It will be found, however, as a rule, that the undisciplined bands that have overthrown regular soldiers in battle have outnumbered the latter in a much higher ratio than that of three to one; and the disparity of numbers has been specially remarkable on several occasions on which English soldiers have met with disaster.

As regards the question of ground, it is obvious that if regular troops are forcing their way through pathless forests or over precipitous rocks, they will be at a disadvantage, whilst so doing, in resisting the attack of an enemy to whom every rood is familiar, and who can avail himself to the utmost of every peculiarity of ground.

On the other hand, on the very rare occasions on which undisciplined levies, not having great numerical superiority or advantage of ground, have overthrown regular and well-disciplined soldiers, the defeat of the latter has been the result either of some gross neglect of military precautions or other tactical error.

The wars of the future will be waged under two novel conditions, which will render necessary an even higher standard of discipline than that which sufficed in the campaigns of the past.

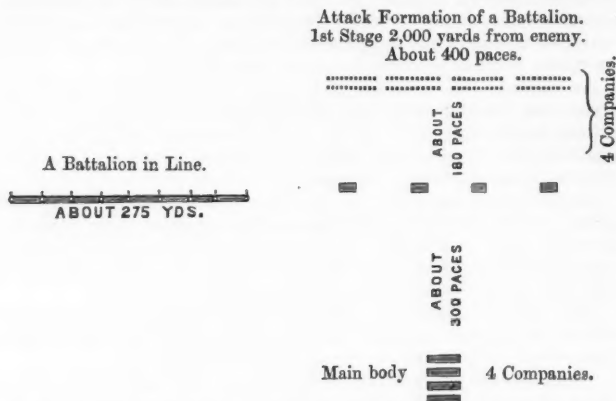
Novel Conditions in Wars of the Future which will render necessary a High Standard of Discipline.—The first of these conditions will be the withdrawal from the immediate control of a Commander-in-Chief of considerable portions of his army, and will be rendered necessary by the vast size of the forces which will probably be engaged. It is obvious, as previously stated, that where enormous armies are operating over a vast area, considerable freedom of action must devolve on subordinate Generals; and hence it will be most necessary that the latter should be loyal to their chief. This question, however, only affects immediately the higher ranks of an army, and its influence will probably be in some degree modified by the increased use of electricity as a means of communication; moreover, it is scarcely likely to make itself felt in an army of the size which this country will ever place in the field.

The second condition referred to has already become an important factor in war, and it may be anticipated that it will undergo further developments in the future. I allude to the loose formation in battle which has been forced upon infantry by the increased accuracy, range, and rapidity of fire of small-arms. This question is of vital moment to all ranks, and affects large as well as small armies.

Napoleon was of opinion that, "could there be two descriptions of infantry, one to act as skirmishers, and the other to remain in line, it would be necessary to choose the best disciplined men to act as skirmishers."¹ For the future, let it be remembered, all infantry will fight as skirmishers. The accompanying sketches represent—the first a battalion in the old shoulder-to-shoulder line, which was the fighting formation for infantry until eighteen years since,—the second a battalion in the extended order in which, henceforth, armies must advance to the attack.

¹ Montholon's "History of the Captivity of Napoleon."

It has been truly said that military problems are not susceptible of mathematical demonstration; but I venture to think that a glance



even at these sketches will show that, in the battles of the future, in consequence of the increased area over which a given body of men in fighting order will be extended, the direct control over their men which will be exercised by Commanders—battalion and company—must be greatly lessened. At the same time, the individual soldier will be relieved from the physical pressure of his comrades which compelled him, in the battles of the past, to act in concert with them and also imparted a feeling of confidence at critical moments.

The whole tendency, therefore, of the loose formation which has now become essential in battle is to militate against that unity of impulse and collective courage which it is the great object of discipline to establish. This tendency, antagonistic to all tactical success, can be counteracted by one agent alone—discipline, stricter, firmer, and better grounded than that of even the best organized armies of former days.

The long range of the rifles now in use, and the rapidity with which they can be loaded and discharged, have forced another problem on the attention of military reformers, namely, the question of "fire discipline."

Fire Discipline.—Given an uneducated and untrained man, armed with a breech-loader, and his inevitable impulse, when in danger, will be to load and discharge his piece with the utmost rapidity, and without regard to direction, elevation, or any other consideration, except that of relieving his excitement by making the greatest possible noise. This impulse, the result of want of confidence, must give rise to fearful confusion: and whilst inflicting little loss on the enemy, leads to a consumption of ammunition which no system of supply can replace. Again, the only power which can control this element of disaster is discipline, so established as to lead each soldier to realize that his best

chance of safety and success is to destroy his enemy, that this can only be accomplished by availing himself, to the utmost, of the powers of his weapon, and that he can only avail himself of these by keeping cool and using his rifle in battle according to the rules which he has learnt in time of peace.

Conclusion.

Fifty years ago one of the most distinguished English Generals of this century thus expressed himself: "Discipline is necessary for health, for safety, for combinations, for keeping up numbers."¹ The causes which rendered discipline of vital importance when he thus wrote remain at the present day with unabated force; and, in addition, the improvements which have been effected in the implements of destruction have given birth to elements of war which can alone be controlled by a discipline more thorough than that which formerly prevailed, and more difficult to establish from the fact that it must be engrained in the heart and brain of each private soldier.

PART II.

I will now pass to the consideration of the means best suited for promoting and maintaining discipline in an armed force.

System of Discipline suited to a particular Army not always Effective with Soldiers of different Nationality.—This is an extremely complex question and opens up a very wide field for discussion, from the fact that the experience gained by studying any system, which has worked successfully in a particular army, cannot invariably be relied on as a guide to that which is suitable for soldiers of a different nationality.

The conditions which prevail both socially and politically, the peculiarities of national temperament, the object with which an army is maintained, and the system under which it is recruited, are all factors which must be carefully weighed before any reliable deduction can be drawn from the study of the military institutions of any particular nation.

This fact, sufficiently obvious in itself, is too often overlooked when comparisons are made between the armies of different States.

Mainsprings of Discipline in an Army.—Speaking generally, however, the following appear to be the mainsprings of discipline in any army, and on their perfection or otherwise will depend its efficiency:—

- (1.) The corps of Officers, their ability and zeal.
- (2.) The class of recruits obtained for the rank and file.
- (3.) The system of pay, messing, and clothing.
- (4.) The course of training.
- (5.) The non-commissioned officers.
- (6.) The system of advancement and reward.
- (7.) The code of punishment.

¹ General Sir Charles Napier.

- (8.) The work to be performed by soldiers in addition to the regular parades, and their occupations and amusements in camp or barracks.
- (9.) The system of training for the reserves.
- (10.) The efficiency of the various branches of the Staff.
- (11.) The organization.

1. *The Officers and their Qualifications. Social Position. Professional Ability, how Guaranteed.*

Experience points to the conclusion that for the maintenance of discipline, it is most desirable that the commissioned ranks of an army should be filled, to a great extent, by gentlemen of education occupying a good social position; but their qualifications should by no means rest here. The tests to be undergone before military rank can be attained should be sufficiently severe to guarantee that every Officer should be thoroughly competent, both theoretically and practically, to instruct those whom he may be called upon to command. "Subordination and habits of obedience are more necessary than mechanical discipline required at the drill; and these can be acquired by soldiers only in proportion as they have confidence in their Officers; and they cannot have confidence in Officers who have no knowledge of their profession."¹

Absolute ignorance can, to a great extent, be guarded against by applying severe professional tests in all cases before either a commission is granted or promotion is conferred; but careless indifference in the performance of duty is almost as prejudicial to discipline as absolute ignorance and is less easy to provide against. In a memorandum on discipline drawn up in 1829, the Duke of Wellington recorded his opinion that, "Our gentlemen Officer, however admirable his conduct on a field of battle, however honourable to himself, however glorious and advantageous to his country, is but a poor creature in disciplining his company in camp, quarters, or cantonments."²

Lack of Zeal, how guarded against.—Such lack of zeal as that indicated can alone be prevented by the existence of a conviction on the part of each Officer that his professional success will depend on his own merits alone. Nothing is more calculated to deaden zeal, and lead to a perfunctory discharge of duty, than a belief amongst the members of any profession that their advancement is purely a matter of favour or chance.

At the same time it is most undesirable that the attention of Officers should be distracted from their duty, by uncertainty as to the duration of their tenure of office, or as to the rates of pension to which they will be entitled on retirement; and hence it is essential, in the interests of discipline, that the regulations affecting the conditions under which Officers serve should be the subject of change as rarely as possible.

¹ "Wellington Despatches," by Gurwood.

² "Wellington Despatches."

Before leaving this branch of the subject, it may be observed that the complications which science has introduced into the art of war render it necessary that Officers should have a professional education as thorough and as profound as that which is usually possessed by members of one of the learned professions.

2. *Class of Recruits obtained for Rank and File.*

The system under which recruits are obtained will principally determine the standard of intelligence and education of the rank and file of an army, and will thus obviously exert considerable influence on its discipline. No surer guarantee of discipline can exist than that which is provided by the self-respect and patriotism of educated men, whatever may be said to the contrary.

"National institutions only will produce that moral discipline necessary to make a soldier fulfil his whole duty; yet the late Lord Melville was not ashamed to declare in Parliament that the worst men made the best soldiers, and this odious, narrow-minded, unworthy maxim had its admirers."¹ The justice of Sir William Napier's criticism was well exemplified years after he wrote these words. The soldiers composing the German Armies in 1870 were better educated and more intelligent than those of any force that has ever taken the field, and nothing could have been more perfect than the discipline which they uniformly exhibited.

Result of Compulsory Service.—If an army is recruited, as the German Army is, by strict compulsory and universal service, its ranks will be filled with individuals from every class of the community; and the large percentage which must necessarily exist of well or fairly educated men will exercise a restraining influence on the whole body. If, on the contrary, an army is recruited under a purely voluntary system, it must compete against other callings in the labour market; and the inducements which any Government will hold out to recruits are usually too insignificant to induce any, as a rule, but men from the least intelligent and worst educated classes to enlist. Under such circumstances, the best and indeed the only course is to try to educate the soldier after he joins the Service, and, as far as may be, to combine civil education with military training.

3. *System of Pay, Messing, and Clothing.*

The pay which a soldier receives, the amount of food which is given him, and the clothes with which he is expected to adorn his person are details which have an important influence on discipline.

"The young soldier is naturally suspicious and always disposed to believe that his immediate superiors impose upon his ignorance."² The disposition of soldiers has not changed since Napoleon thus delivered himself; moreover, at the present day, the vast majority of soldiers are very young.

¹ "History of War in the Peninsula."

² "History of the Captivity of Napoleon."

Desirable that Regulations as to Pay and Rations should be clearly understood.—It is, therefore, most desirable that the regulations which govern the issue of pay and rations should be so framed as to be perfectly understood by all. Nothing more surely produces discontent, and hence injuriously affects discipline, than for men to enlist under the impression that they will receive a certain rate of pay; and for recruits to discover, after joining, that the anticipated wage is subject, before it reaches them, to numerous and varying deductions.

English soldiers, for example, nominally receive, in return for their services, free rations and the sum of 1s. a day; besides being clothed by the State. The free ration, however, includes but a bare allowance of bread and meat; and the coffee even with which the soldier washes down his morning and evening meals, and the vegetables which give relish to his stew, are paid for by withholding a portion of his pay. His remuneration is thus reduced much below its nominal amount, and the young soldier considers himself aggrieved accordingly.

Injury which the Lack of sufficient Food inflicts on Discipline.—The most serious injury, however, which the lack of sufficient food inflicts on discipline is the increase of drunkenness to which it inevitably gives rise. In our Army a soldier has nothing to sustain him between his dinner at midday and his breakfast at eight o'clock next morning, except a meagre and uninviting repast of dry bread and weak coffee, for which many men do not trouble to stay in barracks. The result is that anything that a soldier may imbibe, in the course of an evening, of an alcoholic nature acts on his brain like fire. It has again and again been urged that nine-tenths of the crime in the British Army arises from drunkenness; but I believe that ninety-nine out of every hundred cases of drunkenness amongst soldiers are attributable to their prolonged and daily fast from midday to morning.

Influence on Discipline of Uniform.—As regards the influence on discipline of uniform, the present Adjutant-General has stated that "the better you dress a soldier, the more highly he will be thought of by women, and consequently by himself."¹ At the same time it would appear to be undesirable that the keeping up of a good appearance should be a drag on the soldier's slender means. In our Service, young soldiers are often obliged to pay for new clothing to replace that worn out on duty, hence discontent, and consequent injury to discipline. To avoid this, and enable the men to present the smart appearance which is conducive to discipline, it would certainly appear to be desirable that soldiers should have two distinct uniforms: one to be neat and effective, and to take the place of the present full dress, but to be always worn when walking about off duty, and also on all State parades; the second uniform to be of a strong, serviceable material, and to be of a dark or cardinal red, so as not to readily show wear and tear, and to be used for all ordinary parades. The authorities have of late years issued a blue undress to recruits, but this not being of the national colour, cannot generally be worn. In any case, however, it would seem to be best in the interests of discipline that

¹ "The Soldier's Pocket-book."

the uniform provided should be sufficient for the requirements of all but very dirty or very careless men.

In conclusion, I venture to think that the discipline of our Army would gain, whilst its cost would be very little increased, if the men were provided with an ample sufficiency of both food and clothing, and their pay lowered to one half its present nominal amount, but this sum to be liable to no stoppages for clothing or messing, and, in fact, to be irreducible except for misconduct.

4. *The Course of Training.*

The youth of the non-commissioned officers of the present day renders it desirable that considerable supervision over the training of the men should be exercised by the company Officers. Nothing strengthens the bonds of discipline more than any custom which habituates the men to look to their Officers for guidance and instruction under all circumstances of difficulty, and an excellent system has of late years been adopted in our Service of placing each squadron and company under its own Officers for a month annually, during which time a special course of training in reconnoitring, outpost duty, &c., is gone through.

Advantage to Discipline from Officers instructing their Men.—"There is no better lesson in command," says Sir Charles Napier, "than to let Captains teach their Officers and privates. It imposes responsibility, obliges them to reflect on their duties, and gives a facility for explaining themselves to others; for this reason I always like to see Officers attached to the same company as far as practicable."¹

The system of making Captains responsible for the training of their men, therefore, strengthens the bonds of discipline in two ways: directly by increasing the hold which the Officers have on the rank and file, and indirectly by accustoming the company Officers to exercise command.

Training of Recruits.—Considerable discussion has from time to time taken place as to the advisability of the instruction of recruits being carried on by Officers, instead of by the non-commissioned officers. This point is of some importance as affecting the promotion of discipline, and should, therefore, not be passed without notice in this essay. No doubt, in the German Army the system of placing recruits under the immediate supervision of the company Officers has worked well, but it must be remembered that the task of training is, to use the words of a recent article in the R.U.S.I. Journal, "materially assisted by the military training which all young Germans receive while at school, as well as by the high standard of education diffused throughout the nation. The Lieutenant-Instructor of the company has not to waste his time on hopelessly ignorant dullards, but can count on every recruit with whom he has to deal having a good elementary education, and thus being able to benefit by the teaching which is to fit him for his duties as a soldier."²

¹ "Life of Sir Charles Napier," by Sir W. Napier.

² "R.U.S.I. Journal," No. 133, p. 313.

The task of breaking in the rough element to be found amongst English recruits is a more difficult matter, and, if undertaken by the commissioned ranks, would probably, by bringing the Officers directly into collision with the men, be by no means productive of discipline.

Influence of Drill on Discipline.—As regards the question of drill, all authorities appear to be of opinion that a certain amount of steady drill, in close order, is essential to the promotion of discipline, but at the same time, as such formations cannot now be employed under fire, it would apparently be desirable, with a view to saving time, that all manœuvres in close order should be rendered as simple and easy as possible.

Fire Discipline.—Before leaving this part of the subject it will be well to allude to the question of "fire discipline," and the best means of maintaining discipline generally, amongst soldiers when in extended order.

In a paper entitled "A German Opinion on the Delhi Manœuvres," recently published in the R.U.S.I. Journal, it was stated that, in the English Army, "when the attack commences, all the outward forms of discipline are abandoned." Without hazarding any opinion on this point, it may still be remarked that, on the command being given on an ordinary parade for a battalion to extend for attack, many excellent Officers, at other times quiet and self-possessed, become seized with a species of frenzy, which leads them to pour forth orders and counter-orders, to the confusion of themselves and everyone else. One company is found fault with for not, perhaps, trailing arms correctly, another for not dressing, when extended, with perfect precision; and it is not uncommon to see portions of the firing line ordered to close and extend over again, because of some lack of smartness or mathematical regularity in their extension. The result of this is that all ranks become thoroughly bothered and confused, and discipline is relaxed at the very moment when it is most required, both for the control of fire and for the maintenance of order.

Without doubt, precision and attention to detail are of importance in all military manœuvres; still, considering the great amount of time which soldiers spend in drilling in close order in a barrack square, with the express object of attaining smartness and precision in dressing and such matters, it would appear to be desirable, on the somewhat rare occasions on which infantry assumes a fighting formation, for the Officers to strain every nerve in mastering the intricacies of the work in hand, and in disciplining the men to aim carefully and avail themselves of advantages of ground, whilst preserving their unity of action. To recapitulate this branch of the subject, it may be said that in the interests of discipline, recruits should on joining be grounded in their drill, and trained to habits of order, cleanliness, and propriety by non-commissioned officers, under the supervision of an Adjutant; that, having been initiated in these mysteries, recruits should receive instruction in more scientific matters, such as outpost duty and musketry, from their company Officers; and lastly, that whilst due attention should be paid to steady drill, on the one hand, on the other, every

effort should be made both to habituate the soldier to extended formations, and to establish that kind of discipline which may lead a man, when free from control, to keep cool and make the best use of his rifle.

5. *Non-commissioned Officers.*

In one of his letters, the Duke of Wellington stated that "the foundation of every system of discipline which has for its object the prevention of crimes must be the non-commissioned officers of the Army."¹ Great difficulty is experienced in the English Army at the present day in obtaining thoroughly reliable non-commissioned officers; and apparently in the armies of most Continental nations a similar difficulty is making itself apparent.

Their Influence on Discipline.—It must be remembered that the duties of the non-commissioned ranks are by no means easy to fulfil. They should form a connecting link between the Officers and privates; they should act as advisers as well as instructors to the young soldiers, and their constant presence amongst the latter should enable them to prevent many irregularities which, if permitted to go on unchecked, would lead to serious breaches of discipline.

It is obvious that considerable experience and technical knowledge, coupled with tact and self-restraint, are most necessary amongst the higher non-commissioned ranks, if these duties are to be successfully performed.

It should also be borne in mind that the extended fighting formations of the present day must necessarily give greater independence to each non-commissioned officer on the field of battle, and hence, as considerable individual responsibility in enforcing fire discipline must result, it is most desirable that the training of non-commissioned officers should be sufficient to fit them for exercising control over men under circumstances of difficulty and danger.

Difficulty in a short Service Army of filling non-commissioned Ranks.—In a short service army, the ranks are filled with very young soldiers, amongst whom the qualities necessary for good non-commissioned officers are not usually developed, and hence great difficulty must arise in selecting men for promotion. This difficulty can only be met by holding out considerable inducements to soldiers to qualify themselves by study and hard work for advancement.

With this object, not only should the immediate gain of higher pay and position be offered, but also it would appear to be desirable that the prospective advantage should be presented to any man qualifying for and receiving the rank even of corporal, of being permitted to remain in his regiment during good behaviour and efficiency, with the certainty of pension when his military career is at an end. Some of the smaller appointments in the Civil Service might also be reserved for non-commissioned officers who have retired after long and faithful service.

¹ "Wellington Despatches."

6. *System of Advancement and Reward.*

The question of advancement and reward has been alluded to with reference to both Officers and non-commissioned officers, but I will now consider the subject in greater detail.

The profound discontent which pervaded all ranks of the French Army, and which was excited by the barriers which existed to individual ambition, was one of the principal causes of that complete disappearance of discipline at the time of the Revolution, to which allusion has already been made.

Causes of Indiscipline in French Army at the Time of the Revolution.—The French nobility had, up to that period, monopolized commissions in the army, and the grade which an Officer held depended entirely on his social position, without reference to individual merit or length of service. These monopolies of military rank are described as being "burthensome to the State and odious to the people, without being in the same degree beneficial to those who enjoyed them. Even in military service, which was considered their birthright, the nobility of the second class were seldom permitted to rise above a certain limited rank. Long service might exalt one of them to the grade of Lieutenant-Colonel, . . . but all the better rewards of a life spent in the Army were reserved for the nobles of the highest order."¹ These restrictions gave rise either to listless apathy or to bitter but concealed resentment—sentiments entirely subversive of all discipline.

Reasons assigned by Duke of Wellington for Indiscipline of English Army in Peninsula.—Eighteen years later, during the Peninsular War, the Duke of Wellington frequently alluded in his despatches to breaches of discipline, which he attributes to lack of zeal of subordinate Officers. The inherent fighting power of the British soldier, the failure of Napoleon's ambitious schemes in other lands, and last, but not least, the splendid genius of the Duke of Wellington, combined to crown our efforts in the Peninsula with success; but there is the authority of the Duke himself that the difficulties of the undertaking were immeasurably augmented by indiscipline, caused by neglect of duty on the part of the regimental Officers, such neglect being the result of his inability to hold out any hope of reward to those serving under him. Thus, on the 17th June, 1809, the Duke wrote: "We all know that the discipline and regularity of all armies must depend upon the diligence of the regimental Officers, particularly the subalterns. . . . There are two incitements to men of this description to do their duty as they ought—the fear of punishment and the hope of reward. As for the first, it cannot be given individually, for I believe I should find it very difficult to convict any Officer of doing this description of duty with negligence. . . . As for the other incitement to Officers to do their duty zealously, there is no such thing. We who command the armies of this country, and who are expected to make exertions greater than those made by the French,

¹ Scott's "Life of Napoleon."

. . . have not the power of rewarding or promising a reward for a single Officer of the Army."¹

Again, on the 7th June, 1810, the Duke drew attention "to the state of discipline of the army in general, which I have stated to be attributable in some degree to the want of the power to reward in the hands of those who are honoured with the charge of commanding His Majesty's troops on foreign and active service."¹

A distinguished historian of this campaign thus alludes to the same subject. "Napoleon's troops fought in bright fields, where every helmet caught some beams of glory, but the British soldier conquered under the cold shade of the aristocracy. No honours awaited his daring, no despatch gave his name to the applause of his countrymen, his life of danger and hardship was uncheered by hope, his death unnoticed."²

Necessity of a well-considered System of Advancement and Reward.—All experience points to the conclusion that the existence of a well-considered system of advancement and reward, applicable to all ranks, is one of the surest guarantees of discipline; and whilst, on the one hand, distinguished valour and ability in the field should meet with prompt recognition, on the other, marked zeal and efficiency, even in time of peace, should not be allowed to pass altogether unnoticed.

7. Code of Punishment.

The consideration of rewards naturally leads to the subject of punishments, and it may here be observed that a code of penalties of excessive severity is by no means such a support to discipline as might at first sight be imagined.

Towards the termination of the last and at the beginning of the present century, the British Army served under a scale of punishments of ferocious brutality. Soldiers were frequently scourged until their bladebones were "laid bare and white as those of a skeleton":³ a sentence of 900 lashes was considered a medium infliction; and an Officer who had hesitated, from motives of humanity, to inflict such a punishment would have met with little sympathy. The physical sufferings of the wretched victims were in most cases augmented by mental torture; and after the infliction of innumerable lashes the unhappy soldier was placed on low diet, and a confession was wrung from him by threats of further scourgings on his half-healed back.

Yet what was the result of this system?

Evil Results to Discipline from Excessive Severity.—Sir Ralph Abercromby described the English soldiers of the latter portion of the eighteenth century as formidable to everybody but the enemy: and it is probable that the discipline of the British Army never stood lower than it did at that epoch.

So great was the detestation for their profession which prevailed

¹ "Wellington Despatches."

² "History of War in the Peninsula."

³ "Life of Sir Charles Napier," by Sir W. Napier.

amongst the rank and file, that the men "sought by a variety of devices, evincing extraordinary resolution and subtlety, to escape from their unhappiness. Amongst other modes they created a bastard ophthalmia, which ruined many hundreds of the finest men, and for a long time baffled the medical Officers, both as to cause and cure. Finally, it was discovered that a soldier of the 28th was the originator; and that he had taught the patient to hold his eyelids open, while a comrade scraped lime from the barrack ceiling into his eyes. Inflammation was kept up by other means, the disease became contagious, and the result was terrible; thousands of the finest men were lost to the service."¹

Again, in 1870-71, it is said that a bullet was kept in store for every unruly French soldier, and that military executions were common on the side of the French; but their discipline was, as we have seen, radically defective. The code of the German Army, on the contrary, was remarkably mild, and the number of punishments inflicted was comparatively few. Although, however, a brutal and degrading system of punishment is opposed to discipline in its highest form, yet a concourse of men cannot be controlled unless some sharp remedies are held in reserve to force habits of discipline on the unruly. The higher the standard of education of the rank and file, the less severe will these correctives require to be.

Effect of Hardships on Discipline of Troops.—Again, the severer the hardships and trials to which troops are exposed, the greater will be their tendency to break away from discipline, and harsher must be the penalties necessary to restrain them. At the same time punishment, to be effective, should be swift and sure; and, therefore, military law should, as far as possible, be free from legal technicalities; and should be worked on lines intelligible to all.

In commenting on the practice of making fine-drawn distinctions and laying stress on trifling discrepancies of evidence given before courts-martial, Sir Charles Napier remarks: "To put the pipe down! To take the pipe out of his mouth. To extinguish the pipe—were all one. To make all these distinctions which have no difference is to mislead Officers, and shake their confidence in their own powers, as forming a military court. Such impediments to justice lead to the destruction of all military discipline."¹

8. *The Work to be performed by Soldiers in addition to the regular Parades: and their Occupations and Amusements.*

The principal duties which a soldier has to perform, besides his regular parades, are guards, fatigues, and orderly duty.

Guards.—With reference to the first of these, a certain number of guards are essential, either for actual protection or for purposes of instruction; but as such duty is oppressive, if frequently performed, especially to young soldiers, it is very desirable that the number of guards should be reduced to a minimum.

¹ "Life of Sir Charles Napier," by Sir W. Napier.

Sir Charles Napier thus describes the effects, on the force under his command in India, resulting from an excessive amount of guard duty. "Discipline becomes slack, Officers on detachment are idle, soldiers insolent and disobedient, guards do their duty slovenly, or not at all, and the whole becomes weak and worthless."¹

Fatigues.—As regards the second of the above-mentioned duties, a certain number of regimental and garrison fatigues, such as cleaning barracks and so forth, must be performed by the troops; but at the same time, the less men are occupied in menial duties, especially in cases where they can be seen by the general public, the better for their self-respect and hence for their discipline. It may be said that the class of men who usually enlist in an army, recruited under a voluntary system, are accustomed to labour, and ought not to object to performing it; but it must be remembered that such men join the military profession with a view to becoming soldiers, not labourers. A civilian also can perform any drudgery without exciting notice, whereas a soldier is always conspicuous, and if similarly employed, is likely to be made an object of remark or ridicule, calculated to wound his self-respect, and cause him to dislike his profession. These may appear to be small matters, but soldiers' lives are made up of trifles.

Orderly Duty.—A large number of soldiers are at all times employed in acting as orderlies. This duty is not instructive, like going on guard, and is not required, like fatigues, for purposes of cleanliness or health; and as men thus employed are usually withdrawn from all parades and instruction, it is most desirable that the number of orderlies, both garrison and regimental, should be limited as strictly as possible.

Bad Effects on Discipline produced by withdrawing Soldiers from their regular Instruction.—It should be borne in mind, with regard to both fatigues and orderly duty, that as frequent instruction of soldiers by their Officers tends to draw tighter the bonds of discipline, so, on the other hand, their constant withdrawal from such instruction must have a directly contrary effect: and further, that if young soldiers are left to their own devices to any extent, as they must be when acting as labourers or messengers, they are apt to become careless, and to lose those habits of order, punctuality, and cleanliness which lie at the root of discipline.

Occupations and Amusements.—A soldier's occupations and amusements in barracks are important factors in the maintenance of discipline.

As the attractions of taverns and other haunts of a garrison town are the sources from which a soldier's troubles usually spring, every effort should be made to occupy the men's spare time profitably, or at any rate innocently, and to induce them to look on their barracks as their home: hence reading and recreation rooms should be developed, and any reasonable amusements should be encouraged to the utmost.

¹ "Life of Sir Charles Napier."

9. *Training of the Reserves.*

Necessary that Men should be periodically recalled to the Colours.—Soldiers on quitting the colours quickly lose their military spirit and discipline, and, therefore, if the regiments and corps composing an army are dependent on the reserves for the completion of their war establishments, it is very desirable that the reserve men should be periodically embodied for training in times of peace, so that when they are recalled to the colours on the outbreak of war, the discipline of the various units may not suffer from the influx of a large number of men whose military instincts have been allowed to rust for years in civil life.

The reserves of the German Army had, previous to 1870, been subjected to trainings at regular intervals, and hence its discipline was unimpaired by the great augmentation which took place, on the declaration of war, by the recall of the reservists to the colours.

On the calling out of the French reservists, who had not been subjected to periodical trainings with the same regularity, serious riots and excesses occurred; and at Strasburg and elsewhere, crowds of reserve men who had not been told off to any particular regiments wandered about the streets, and added to the general confusion by begging and creating disturbances. Again, on the calling out of our own reserves in 1878 and in 1882, most of the men had not performed any military duty since quitting their regiments on the expiration of their service with the colours; and in many instances the reservists appeared at first to have, to some extent, lost their military instincts, and to have found a difficulty in settling down to the steady routine of military discipline.

Desirable that the Reservists should rejoin the Regiments in which they originally served.—It is also advantageous, in the interests of discipline, that reserve men should, when recalled to the colours, rejoin the same units in which they originally served their apprenticeship as soldiers. Men will usually be under greater restraint, and will yield a more cheerful obedience, when serving under Officers and non-commissioned officers whom they know and to whom they are known, rather than if they were under strangers; and, moreover, human beings are creatures of habit, and hence, if a man finds himself amongst familiar faces and surroundings, he will generally settle down quickly and easily into the habits of order and regularity to which he has been accustomed in former years, and under similar circumstances.

10. *Efficiency of the Staff.*

Any detailed description of the functions of the Staff would be out of place in this essay; nor will it be possible to distinguish nicely between the duties of its various branches; but it is only necessary to consider for a moment the nature of these functions to fully realize the disastrous results to discipline which must arise from any lack of efficiency in this part of an army, especially during a campaign.

Duties of the Staff considered.—Staff Officers, besides adopting regulations for good order and police, must arrange all details necessary for the assembling of troops, the execution of marches, the formation of camps, and the supply of information. They are responsible for the organization of the lines of communication, and hence must supervise the passage to and from an army of the convoys on which it depends, on one hand for the supply of provisions and munitions of war, on the other for the withdrawal of the sick and wounded. In a word, on the Staff of an army devolves the duty, not only of supervising and directing, from its inception to its completion, every manœuvre the execution of which is required by the plans or necessities of a Commander-in-Chief, but also of carrying out the preliminaries without which no movement could be attempted with any hope of success.

Disastrous Result to Discipline from Inefficiency of Staff.—Want of forethought, or neglect, or even slackness in the performance of any detail, will inevitably give rise to friction, calculated to strain the discipline of the military machine, perhaps beyond its utmost endurance.

We learn from Sir William Napier that during a part of the Peninsular War "a notable thing was the discontent of the veteran troops with the Staff Officers. The assembling of the sick men at the place and time prescribed to form the convoys was punctually attended to by the regimental Officers; not so by the others, nor by the Commissaries who had charge to provide the means of transport, hence delay and great suffering to the sick, and the wearing out of healthy men's strength by waiting, with their knapsacks on, for the negligent. When the Light Division was left on the right bank of the Tormes to cover the passage at Alba, a prudent order that all baggage or other impediments should pass rapidly over the narrow bridge at that place without halting on the enemy's side was . . . so rigorously interpreted as to deprive the troops of their ration bullocks and flour mules at the very moment of distribution. . . . All regimental Officers know that discontent thus created is most hurtful to discipline, and it is in these particulars the value of a good and experienced Staff is found."

Qualifications necessary for Staff Officers.—The duties of the Staff being therefore both varied and difficult, it is essential to the proper discipline of an army that the Officers composing its Staff should not only have educational attainments and industry, but should, in addition, be practical men, possessed of judgment, character, and resource, and hence the greatest care should be exercised in their selection.

11. Organization.

As regards organization, there appears to be no doubt that the system of localizing regiments and corps, and forming them into permanent brigades and divisions, is that which is best calculated to maintain the discipline of an army.

¹ "History of War in the Peninsula."

Advantages of Localization.—Such a system, however, can rarely be completely carried out, or applied without exception to the units of an army. Political considerations, as in France, may render it impossible, or at all events most undesirable, to quarter regiments in the towns or districts from which they are recruited; or the possession of a Colonial Empire, as with England, may render it necessary to withdraw considerable portions of the army from the mother country, and to maintain these portions in distant quarters of the globe, as garrisons for remote dependencies. Such detachments militate against discipline, because they prevent the organization of the regiments and corps into brigades, divisions, and army corps, and at the same time necessitate the frequent transfer of soldiers from one part of the Empire to another.

Memorandum by the Duke of Wellington.—In a memorandum on discipline, drawn up in 1829, the Duke of Wellington thus refers to this subject: "We must observe that the army of Prussia, besides the advantage of its state of ordinary repose, to enable it to carry into execution this system of discipline, is at all times regularly organized, each battalion in its regiment, each regiment in its brigade, each brigade in its division, each division in its *corps d'armée*; the whole under the personal inspection of the King. So that there is not a corps, division, brigade, regiment, battalion, company, or individual whose conduct is not checked and controlled by his superior, as well as by the view and knowledge of the whole of the profession. Compare this state of things with the British Army—with our detachments in Ireland and the West Indies, Honduras, &c., . . . with our total want of inspection and control over either Officers or men, in nearly all parts of the world, and we shall see cause for astonishment that there is any discipline in the Army at all."¹

Conclusion.

A French writer of the eighteenth century has defined discipline to be "the art of inspiring soldiers with more fear of their own Officers than they have for the enemy;"² an epigrammatic utterance which, like many other sayings of a similar character, is far better known and oftener quoted than it deserves to be.

The chances of success which would, in the present day, attach to any army whose discipline was maintained by fear alone, would, other things being equal, be small indeed if pitted against a force disciplined on more enlightened principles.

The whole fabric of discipline in a military body should have, as its foundation, intelligent habits of order and regularity, instilled in time of peace by careful and systematic training. It is by no means implied that discipline can be upheld without resort to punishment, for in any body of men individuals will be found for whose guidance in the paths of military virtue something more tangible than moral

¹ "Wellington Despatches."

² Helvetius's "L'Esprit."

suasion will be requisite; but at the same time the code of punishments should exist rather as a reserve, to be called forth on emergency, than as a prominent factor in the maintenance of discipline.

In the interests of discipline, the entire system of training—the whole routine of military life—should have for its object, in addition to actual instruction, the establishing of an interest in, and liking for, his profession, on the part of each soldier; and this can best be accomplished by making the work as attractive as possible. It is recorded that, at the beginning of the present century, soldiers were “maddened by the monotony of drill,”¹ and discipline suffered in consequence; but the numerous subjects in which soldiers must now be instructed should render such monotony impossible in the present day; and outpost duty, reconnaissance, elementary field engineering, and musketry can be made to form a welcome variation from the monotony of regular drill in the barrack square.

“The greater the individuality you give to the soldier himself and to his battalion, the more he feels that his individual conduct is of importance. . . . Make a man proud of himself and of his corps, and he can always be depended upon.”²

In recent years, the tendency of the military authorities in this country has been to ameliorate the condition of the rank and file, and, by judicious concessions of increased freedom, to give rise to sentiments of self-respect and individual responsibility. No evil results to discipline appear to have arisen from these reforms; on the contrary, the conduct of both non-commissioned officers and men seems to improve year by year, clearly proving that the concessions granted have been strides in the path of discipline in its highest and best form; and that whilst, on the one hand, individual freedom is consistent with a disciplined devotion to duty, on the other hand, an oppressive military system is in no sense a guarantee of discipline or of efficiency.

“Jove fixed it certain that whatever day
Makes man a slave, takes half his work away.”

¹ “Life of Sir Charles Napier.”

² Lord Wolseley: “Soldier's Pocket-book.”



ESSAY.

"DISCIPLINE: ITS IMPORTANCE TO AN ARMED FORCE, AND THE BEST MEANS OF PROMOTING AND MAIN- TAINING IT."

By Captain F. G. STONE, R.A.

Motto: "Suaviter in modo, fortiter in re."

ARRANGEMENT OF THE SUBJECT.

Introduction.—Nature of Discipline: its signification, its threefold aspect.

Mental and Moral Aspect of Discipline.—Analysis of its nature. Cultivation of individuality and sense of responsibility. Intelligent *v.* blind obedience. Officers to study their profession. Encouragement to study. Training of cadets. Importance of minor duties. Selection of Officers to train youth. Spartan discipline. Effect of moral force. Difference between technical and moral discipline illustrated by War of American Revolution. Ethnological considerations. Spartan Army. German Army. British Army. Influence of the commander. Napoleon, Blücher, Wellington. Selection of Commanders. Officers sharing hardships with their men. Increasing importance of intellectual training. Conscription. Recruiting. Good class of Officers easily obtained, but this not the case with rank and file. Political considerations. Social considerations. Responsibility. Obedience. Organization: the artillery "division" and the infantry "section." Soldiers' food. System of contracts. Supply of food to an army in the field. Military music. Recreation.

Physical and Technical Aspect of Discipline.—Training of instinct by habit. Control by training, and not by word of command. New attack formation for infantry. Length of bayonet. Night operations. System of casualties. Troop and company training. Use of arms. Marching in peace and in war, strategic marches, standing under arms, reconnoitring and screening duties, carrying men's packs. Individual training. Guards and sentries. Fatigues.

Penal Aspect of Discipline: Military Law.—The power of law. Different aspects of the same crime. Difference between social and military law. Administration of military law in peace-time. Discretion of Commanding Officer. Responsibility of sections and companies for their own discipline. Power of company Officers and non-commissioned officers to inflict minor punishments. "Marching order." Preventive measures. Duties of Adjutant. Statistics of crime. Defaulter sheets. Crime on service. Custom of war. Wellington and Napoleon. Flogging. Death. Summary punishment by field imprisonment. Discharge with ignominy. Statistics of punishments. Minor offences on service, their prevention. Rewards.

Summary.—Selection of recruits. Influence of short service. Modified system advocated. Mobilization. Subaltern Officers. Duties of the State and influence of public opinion.

Appendix.—Rates of pay and pension: stoppages, rewards, &c., from 1848 to 1888.

WORKS referred to and Abbreviations used.

TITLE OF WORK.	ABBREVIATION.
"A Sketch of War as it will be." Translated from the German "Das Volk in Waffen" of General von der Goltz, by Sir Lumley Graham, Bart., R.U.S.I.....	<i>Goltz.</i>
"Annals of Tacitus".....	<i>Tacitus.</i>
"Annual Return of Courts-Martial and Minor Punishments;" known as General FitzWygram's Return	<i>FitzWygram.</i>
"Armies of Asia and Europe." General Upton's official report to the United States' Government	<i>Upton.</i>
"Army Act," 1881.	
"Army Discipline and Regulation Act" 1879.	
"Callwell's Prize Essay." Gold Medal R.U.S.I.....	<i>Callwell.</i>
"Courage." By Lord Wolseley. "Fortnightly Review," August, 1888	<i>Wolseley on Courage.</i>
"Descent of Man." Darwin	<i>Darwin.</i>
"Extracts from Divisional Orders." By Lieut.-General Sir F. Roberts	<i>Roberts.</i>
"Fire Tactics for Infantry." Captain Mayne, R.E.	<i>Mayne.</i>
"Formation, Discipline, and Economy of Armies." Jackson	<i>Jackson.</i>
"General Orders."	<i>G. O.</i>
"General Annual Return of the British Army, 1880-81".....	<i>Gen. Ann. Return.</i>
"Haydn's Dictionary of Dates".....	<i>Haydn.</i>
"Letters from General Sir Robert Wilson, British Commissioner with the Russian Army, 1812"	<i>Sir R. Wilson.</i>
"Library Dictionary of the English Language."	
"Mechanism of the Counter Attack." By Major Smith, R.A., R.U.S.I.....	<i>R.U.S.I.</i>
"Military Genius." By Lord Wolseley. "Fortnightly Review," August, 1888	<i>Wolseley on Mil. Genius.</i>
"Military Law." By Major-General C. J. Napier, C.B.....	<i>Napier.</i>
"Pay Warrants."	
"Queen's Regulations."	
"Report on Magazine Rifles".....	<i>Colonel Slade.</i>
"Report of Committee to enquire into the Conditions of Soldiers' Service as affected by the Short Service System"	<i>Report on Short Service.</i>
"Report of the Director-General of the Army Medical Staff, 1886."	<i>Director-General A.M.S.</i>
"Royal Commission on Recruiting, 1861 and 1867."	
"Sir A. Alison's Memorandum to the Troops at Aldershot, September, 1888"	<i>Sir A. Alison's Mem.</i>
"Tovey's 'Laws and Customs of War'"	<i>Tovey.</i>

Nature of Discipline.—Discipline is an exotic, planted often in ungenial soil, requiring unremitting care in its cultivation, and bringing its fruit to perfection only when tended by a skilled and sympathetic hand. In peace-time it underlies and forms the basis of the entire military fabric; and in war it is the invisible essence which, permeating an entire army, inspires it with the soul of the Commander, and enables it to achieve great and glorious deeds.

The primary signification of the word is—"education; training of the mind; formation of manners:" its secondary meaning is—"subjection to authority; accustoming to regular and systematic action;

drill:" and its final implication is—"penal infliction; improvement by corrective and penal methods."¹

We may thus approach the subject from three points of view, and treat it under (1) its mental and moral aspects; (2) its physical and technical aspects; and (3) its penal aspect: these three avenues of approach being, however, coexistent, and converging always on the same point, while side lights from one will ever and anon flicker across our path in pursuing another.

Mental and Moral Aspects of Discipline.

"The superiority which disciplined soldiers have over undisciplined hordes is principally a consequence of the confidence which each man places in his comrade."²

"Mutual, and not independent action, is the secret of success in war, and for mutual action to exist there must be discipline, direction, and control."³

The importance of this mutual confidence can scarcely be over-rated, and should be fostered by every means in our power. The reluctance shown by many military experts, before they could be brought to acquiesce in the comparatively loose fighting formation of the present day, was founded on a not unreasonable apprehension, that the feeling of confidence engendered by the proximity of comrades on the right and left, and also in rear, to say nothing of the perfect control of every section, company, and battalion by its own Commander, would be seriously impaired if not altogether lost. It is, however, necessary to accommodate ourselves to altered circumstances, and while fully recognizing the difficulty, seek for the best means of overcoming it. It would be futile to rely any longer upon the rigid discipline of close formations under which Wellington found it possible to achieve his memorable victories: the soldier was then always under the eye of his Officer, and whether standing on the defensive or advancing to the attack, whatever his individual feelings might be, he was from force of circumstances unable to indulge them, unless they happened to be in consonance with those of his Commander. His comrades on either side of him appeared to be carrying out their duty without flinching, and he did not stop to enquire the cause, but buoyed up by the moral support thus unconsciously rendered, assumed a confidence which, had he been able to read the thoughts of his comrades, he might have been far from feeling.

This mutual confidence is still a factor in the question, but we have perforce to work now upon different lines in order to cope successfully with the new order of things which has arisen under the *régime* of modern firearms and extended formations. The tendency of the old system of military training was to convert a man into the most

¹ "Library Dictionary of the English Language."

² Darwin's "Descent of Man."

³ Mayne's "Infantry Fire Tactics," p. 418.

perfect automaton possible; a soldier had "no business to think," he was required only "to do as he was ordered." Our present system is by no means free from reproach in this respect; but our aim in the future must be to cultivate the individuality of the soldier, so that he may not find himself at a loss when left to his own resources; to rouse in him a sense of responsibility, and thus raise his self-respect; to cultivate his moral tone, so that he may understand the value of obedience to orders, and carry them out from a high sense of duty, and not from fear of punishment. Again, we must cultivate his intellectual faculties in order that we may be able to appeal to his reason, for it cannot be doubted that an order is better carried out by a man who understands its purport than by one who merely obeys blindly because he is trained to do as he is told without question. This is especially necessary with young soldiers, who, from lack of experience and matured judgment, require the object for which they are striving to be kept prominently in view: a young soldier is, moreover, naturally eager and impulsive, and a good Commander should know how to turn these qualities to account.

It is not to be supposed that any questioning of the necessity of an order should be permitted for a moment, but there is no doubt that a man who is accustomed to understand that there is always a reason for every order given, will readily realize that he must carry out many orders for which the reasons may not be evident to him until long after they have been executed, and perhaps not even then: not only will such a man carry out orders promptly, but he will also carry them out intelligently; and, inasmuch as a higher degree of intelligence is required from every soldier by the exigencies of modern warfare, it behoves us to do all that in us lies to cultivate the individual intelligence of soldiers to such a point that, when left to act upon their own responsibility, they may still continue to carry out the *spirit* of the instructions they have received, and not relapse into the helpless condition of a flock of sheep, ready to give way to the impulse of the moment, and to become a prey to disorganization and panic.

Officers, Study of their Profession; Officers, Necessity for Encouragement to Study.—For this purpose, it is abundantly clear that in the first place Officers of all ranks must be deeply imbued with these ideas themselves. It is impossible to carry conviction to the hearts of others unless we have a living faith ourselves in the precepts which we inculcate: the impulse must be given from above, and given in such a way that it will carry conviction with it. Officers must realize that the study of their profession is their first duty, and *should* be their pleasure also, if ambition finds any place in their breasts.

Lack of Encouragement; Its Effect on Discipline.—General Upton gives us a melancholy picture of the Chinese Army, in which he says: "No encouragement is given to the Officers to study the art of war, . . . he is sunk in ignorance as deep as the men, and frequently shows as little respect for law and military discipline."¹

¹ General Upton (U.S. Army), "Armies of Asia and Europe," p. 23.

Training of Cadets.—It should be a matter of the deepest interest to our military authorities to provide such a training for cadets that they may enter the Service not merely qualified to take up the ordinary routine duties which form an important part of every Officer's daily duties, but that they should be impressed at the outset of their career with a desire to excel in their profession, and by close attention to the details of their work, and a conscientious performance of minor duties, set a good example to the non-commissioned officers, and win the respect and confidence of their men.

Importance of Minor Duties.—"The zest with which the so-called minor duties have been for so long a time carried out in the German Army is by no means merely the result of routine or of unproductive pedantry, but is rather due to the moral aim of creating in the soldier's imagination a representation of duty in a manner adapted to his intellectual faculties. The conscientiousness in small things should certainly not be confined to the mere technical details of military life; on the contrary, the many things which do not appear on the surface . . . deserve special attention. A disposition to cleanliness, love of order, punctuality, carefulness, faithfulness, and decision will but contribute to the establishment of good discipline. The custom has hitherto prevailed of leaving certain minor details of administration in the hands of company Officers. This is not done with a view to economy, but in order to strengthen the influence of the Officer over those under him, by means of the intimate intercourse thus produced. This peculiarity in German Army life, in combination with the belief in the necessity of a strict performance of duty, has created a feeling of most complete unity in the ranks. The most complete interdependence between Officers and men has arisen from the zealous performance of duties common to both. The moral force derived from the feeling of interdependence remains firm when the excitement and confusion of battle render control impossible, and regularity, which is the offspring of law, has ceased to exist."¹

The constant intercourse between Officers and men which these minor duties entail afford many opportunities of gaining the affection of the men, and bringing them gradually to look at all their duties from a higher standpoint, viz., as a means towards the great end which all alike have in view—the honour and integrity of the Empire.

Ambition, a high sense of honour, and a patriotic love of duty, are sentiments which are readily awakened in youth; the unformed mind readily adapts itself to the atmosphere with which it is surrounded, and lasting impressions may be made in a few months which bear their fruit in after life, and frequently determine a career for good or for evil. The Officers who are selected for the highly responsible duty of training cadets at our two great military training schools should therefore be chosen because they embody in their own persons the principles which it is desired to inculcate, and because in their

¹ "A Sketch of War as it will be," translated from the German "Das Volk in Waffen" of Von der Goltz. Sir Lumley Graham, R.U.S.I.

own military career they have given evidence that with them these principles are a living faith, and not a parrot formula learnt out of a text book. If such men as these, men who have already begun to earn distinction, and who in the ordinary course will go on until they have won their laurels in many a hard-fought field, if such men pass a few years in training others to follow in their steps, the gain would be incalculable.

Education has never been our strong point in England; whether it be civil, military, or technical, we seem to have an unhappy knack of letting the essence escape us; we do not adapt the means to the end; in fact, few people take the trouble to enquire what the particular end in view may be. "The selection of persons who are possessed of intellectual and physical capacity for the practice of war, and the instruction of persons so selected in approved forms of discipline for the accomplishment of purposes, may be regarded as a matter of the highest national concern. It conduces to the preservation of national independence from the aggressions of foreign force, and on this ground demands the deepest attention of patriotic statesmen and the closest study of scientific soldiers."¹

Spartan Discipline.—With Officers trained on these lines, the discipline of the men would soon be raised to a point never dreamt of under the old *régime*: drills, exercises, and regulations would attain a new significance, and would be carried out with the understanding, instead of being merely conformed to by the letter: we might hope to attain to something like the Spartan discipline of old, which not only enjoined that the will of the Commander should be obeyed as an order, but provided also that the execution should be *animated as an act*; for every soldier comprehended the force of an order, being educated in the art of war, and capable of understanding the aim and object of the movements which were to be executed in face of the enemy. The Spartan phalanx was not merely cemented in its foundation by a well-arranged correspondence of physical power, it was animated throughout by intelligence and devotion to duty. "The young Spartan was enticed to look at things with his own eyes, and to exercise his own mind in all things that regarded his profession: he was, in fact, so trained as to become a man within himself on every point that relates to war. The system of education thus pursued kept him steadily to the point of business, it tried and proved his temper, his obedience, and his courage."²

In fact, it was not so much the actual physical force of the celebrated phalanx which won so many victories for Sparta, but rather the men who formed the component parts of that phalanx.

And as it was in the past so it will be in the future: machine guns, new explosives, and magazine rifles have complicated modern warfare and added to our power of destruction; but these in themselves will not win the day. "Most men who have seen a great deal of war have come to the conclusion that it is not the bullets, or the

¹ Jackson's "Formation, Discipline, and Economy of Armies," p. 1.

² *Ibid.*, p. 35.

bayonets either, but the men, and the hearts that are in the men. You do not sweep away the enemy with your bullets or your bayonets; you do not with your bullets kill all those who are opposed to you, and then walk over their bodies; you do not with your bayonets thrust your adversary through, for the bayonets rarely meet; but what happens is this: one side showing a firm front, courage, determination, and discipline, whatever be the conditions, produces on the other side a sinking of heart, which causes the weaker-hearted to run away. I do not care whether you call it the bullet or the bayonet which is the means to this end, but the real fact is that the side which has the greatest moral force wins. . . . The Officer who makes up his mind that he wants to win in war should endeavour as far as possible to imbibe the spirit of fighting tactics, but above all to conquer the love and confidence of his men. Then, and not till then, everything that he does will have life in it, and he and those whom he commands will be perfectly certain of beating the enemy which is opposed to them."¹

Difference between Technical and Moral Discipline.—During the war of the American Revolution, the British troops were supported by a contingent of Hessian mercenaries; these latter were far more highly trained and disciplined from a technical point of view than the British troops, and their fighting power has never been called in question; nevertheless, on more than one occasion, it was made abundantly clear that our adversaries stood in much greater dread of our own troops than they did of our mercenary allies; the reason is not far to seek; the Hessians did their duty and no more, that is to say, they acted up to the letter of the contract by which they were bound, but they had no personal interest in the struggle beyond the earning of their daily wage; the British, on the other hand, comparatively raw and undisciplined as they were, were animated with strong personal feelings, they fought with a dash and enterprise born of pride of race and patriotic enthusiasm, and a moral discipline not learnt on the parade-ground.

It must not be supposed, however, that such feelings as these can be relied upon *per se* to win victories against highly-trained troops fighting in a national cause; they form nevertheless a groundwork upon which a very solid fabric may be reared, if tact, sympathy, and intelligent cultivation are brought to bear upon them, and no amount of trouble should be considered too great in such a cause; the Officer who exerts himself to foster these qualities and perfect them to the greatest possible extent will reap a rich reward in the day of trial; when the din of battle is round him, and the enemy pressing him hard, in the deadly breach when support is no longer at hand, and verbal orders are drowned in the deafening crash of the encounter; at such moments each man acts upon impulse, and it is well for him if he can feel certain that the impulse will be *forward*! "Almost every man who has ever led a storming party across the open in full view of the enemy will acknowledge that his prominent and all-

¹ Colonel Brackenbury, R.A., vol. xxxii, p. 456, R.U.S.I.

absorbing anxiety from first to last was, 'Will my men follow me?' He has no shadow of misgiving as to his own courage and determination to lead the way, but the horrid question, and the doubt it engenders, robs him of much of that frenzied enjoyment which is past the understanding of all who have not taken part in such an enterprise. . . . What gratitude the leader feels for ever afterwards to those two or three men who stuck close to his heels, whose eyes met his whenever he looked over his shoulder to see how those behind were following!"¹

Ethnological Considerations.—In order to establish the moral discipline of an army on a firm basis, it is necessary to study closely the idiosyncrasies of its component parts.

Spartan Army.—In the Spartan Army we find perhaps the highest ideal of moral (as well as physical) discipline that has ever been attained. "The Spartans stand alone among nations as conquerors of themselves; they attained through the discipline of their institutions the view of a sentiment which commanded their actions to the right channel, and the right channel only; consequently the genuine Spartan, who was a man at all times, exulted in no success and desponded in no reverse."²

The early training of the Spartan youth, and the whole tendency of their unique social system, combined to form these great military qualities into national characteristics; but in the present day, living as we do in a state of the most complex civilization, and forced to consider all manner of conflicting interests, it would be out of the question to think of training the whole nation on certain definite lines, with a view to taking advantage of the qualities thus developed, in order to graft upon them a perfect system of military discipline.

German Army.—The German Nation and Army approach most nearly in modern times to the ancient ideal, and the conditions which called both into existence are strikingly similar, viz.:—the pressing necessity for individual devotion and self-denial in the great cause of national existence.

In England the necessity does not appear so pressing; the absence of immediate danger and the freedom from foreign aggression causes the nation's pulse to beat slowly, and renders its interest in military matters somewhat languid. We cannot attempt to train the nation, in order that soldiers possessing the desired military instincts may be forthcoming for its defence; we must, on the contrary, take the peculiar characteristics of our soldiers as we find them, and instead of trying to develop new idiosyncrasies, study rather to make the most we can out of the materials presented to us.

British Army.—Our Army is composed principally of three nationalities, English, Scotch, and Irish, each possessing its own salient features.

The Englishman is generally open and manly in character, and

¹ Lord Wolseley on Courage. "Fortnightly Review," August, 1888.

² Jackson, p. 43.

performs his duty faithfully, though, as a rule, without enthusiasm. He is susceptible of correct mechanical discipline, steady in action, cool in temper, and generous to a conquered foe.¹ He is, however, more easily affected by the discomforts of a campaign than a Scotsman or an Irishman, and in case of privation he does not consider the cause with discrimination, but breaks out into a grumble which takes care to make itself heard; in fact, he looks upon it as the duty of his superior Officers to see that he is well fed and more or less well housed, and regards it as no part of his duty to put up with what he considers unnecessary privation, without expressing his feelings on the subject. A good grumble is, however, the English soldier's safety-valve; he is naturally law-abiding, and serious disaffection from such causes as these is not to be apprehended. The Scot (especially the Highlander) is physically better fitted for campaigning than his English comrade, and seldom grumbles at discomfort or privation. He is capable of intense military enthusiasm, and under the influence of the bagpipes will advance to the assault of a position with a sort of frenzy, fighting with a ferocity unknown to an Englishman. He is more vindictive and less easy to control when his blood is up, but is nevertheless cautious in committing himself, and seldom follows a wrong line of action; he is eminently trustworthy, and can be equally depended upon for a night attack, a pursuit, or the assault of a position.

The Irishman is, as a rule, indifferent to danger, careless, and without thought of himself; he is extremely impulsive and requires careful handling; he is brave, but his courage cannot always be relied upon; he is cheerful under the most depressing circumstances, but not infrequently loses heart at a critical moment. He will perform his duty under the most trying conditions as if it were a pleasure, but should he conceive himself wronged, he will cherish a feeling of resentment for months. Discipline is apt to be irksome to him, and is frequently regarded in the light of oppression, instead of being understood for the good of the Service and for the general welfare. He is capable of strong attachments, and is of a lovable, if somewhat unstable nature. His manners are winning, and for this very reason he is sometimes accused of insincerity. The Officer who can command an Englishman's respect, a Scotsman's confidence, and an Irishman's love, is not far removed from being a born leader of men.

Influence of the Commander.—The quality of the Commander is a direct factor in the maintenance of discipline from whichever point of view we regard it, but above all does it make its influence felt in raising the *morale* of the troops from a standard of merely mechanical excellence which seldom rises to higher flights than the bare discharge of duty, to one of lofty self-abnegation which urges a man resolutely to shake himself free from the trammels of vulgar personal interests, and to embrace with enthusiasm every opportunity of earning the approbation of his Commander, winning laurels for his country, and

¹ Instances are not wanting to show that this generosity is often misplaced, *e.g.*, in the Sudan.

by his example in the bivouac, on the march, and in the battle encouraging his comrades to unflinching endurance of hardship and inciting them to great and glorious deeds such as shall point a moral and adorn a page in history for the behoof of those who come after.

No one knew better than Napoleon how to cultivate discipline of this sort; Blücher, after his simple fashion, excelled equally in this respect, though perhaps less intelligently. Both succeeded in implanting a high *morale* in their men, differing not in degree but rather in kind; the former working more with the head, the latter with the heart, but in both cases strong personal attachment to their leader formed the mainspring of action on the part of the men. Wellington was undoubtedly deficient on this score; he did not believe that his men were capable of being actuated by lofty motives; the addresses with which Napoleon could move his men as by magic, or the simple but stirring words with which Blücher could rouse his troops to the highest pitch of enthusiasm, would have seemed to the great Duke "as sounding brass or a tinkling cymbal," and certainly in his mouth would not have been free from a suspicion of cynicism.

Notwithstanding the lack of sympathy which to a certain extent existed between Wellington and his soldiers, the latter were bound to their leader by the strong ties of perfect confidence in his ability, respect for his character, and belief in the justness of his administration.

Want of confidence in a Commander on the part of the men is a far more deadly evil than absence of affection or lack of enthusiasm, for it strikes at the very root of moral discipline, and brings discontent, mutiny, and panic in its train. "What few men, not soldiers, can realize is that quality which Cæsar showed when defeated, by no fault of his own, at Dyrrhacium, or when, after almost all the world had deserted him because of his apparent failure in Spain, he changed the history of the world by his calm facing of misfortune. . . . A man must almost have stood in the position of the General who suddenly sees before him the probability of failure, to realize the strain that Cæsar must have undergone, and the greatness of the mind that, unaffected by fate or chance, could in such circumstances lift the feelings of a whole army from discouragement and despair to victory-giving enthusiasm."¹

Selection of Commanders.—There is not the smallest doubt that the selection of Commanders plays an even more important part in the conduct and issue of a campaign than we are wont to allow; two men of apparently equal mental power may obtain very strikingly different results with the same material. "When two men are put into competition who possess every mental quality in the same perfection, with the exception that one has higher energy, perseverance, and courage, this one will gain the victory. He may be said to possess genius, for genius has been declared by a great authority to be patience; and patience in this sense means unflinching undaunted perseverance. But this view of genius is perhaps deficient; for

¹ Lord Wolseley. "Fortnightly Review," Sept., 1898.

without the higher powers of the imagination and reason, no eminent success in many subjects can be gained."¹

The slow process of evolution has not greatly changed human nature from what it was in the time of the Roman Empire, and hearts are won in these latter days by the same homely methods that obtained then.

Officers participating in Hardships.—What better example could we have than that of Corbulo in his brilliant campaign against the Parthians: "During the severity of the weather he gave an example of strenuous exertion; he was busy in every quarter, thinly clad, his head uncovered, in the ranks, at the works; commending the brave, relieving the weak, and by his own active vigour exciting the emulation of his men."²

The late Emperor Frederick of Germany, who in ten years had seen more of war on a large scale than falls to the lot of most men in a lifetime, was beloved by his troops for his fortitude and humanity, and above all on account of his indifference to his own personal comfort, a true Hohenzollern trait. There will be little ground for grumbling when all share alike, for the men will recognize the necessity of bearing their trials and discomforts patiently when they see their leaders in the same straits as themselves, and the idea that they are being neglected, while their Officers are making merry, is one which under such conditions can never find a place in their minds. The following extract from the diary of the late Emperor Frederick, written after the Battle of Königgrätz, is of extraordinary significance: "With straw and the like we made ourselves as comfortable as we could in an empty house without furniture, and, after living on bread and cognac all day, we supped on a loaf of ammunition bread which we had chanced to buy from a camp sutler. We ourselves had been in the saddle from 8 A.M. till 8.30 P.M."

Intellectual Training: its Increasing Importance.—It must be borne in mind that the battle-fields of the future will inevitably make far greater demands upon the individual capacity of the soldier than those of former days, and his intellectual training becomes therefore a matter of ever-increasing importance. It was sufficiently remarkable in the Mutiny that the sepoys who fought against us conducted themselves at first with the greatest bravery, but being without leaders trained to the science of war, they soon became demoralized; and having no other military qualities themselves beyond courage (amounting to fanaticism), a mechanical skill in the use of their weapons, and a fair proficiency in drill, panic followed rapidly upon the heels of defeat, and a formidable revolt was crushed by a mere handful of men in an incredibly short space of time. The native artillery, however, being more highly trained, and of superior intellectual power, gave us far more trouble than the infantry; the native gunners had learnt to think for themselves, and possessed an individuality which secured for them the most conspicuous proof that

Darwin's "Descent of Man," vol. ii, p. 328.

² "Tacitus," Book xiii, sec. 35.

we recognized their ability—in the reorganization of the Native Army which followed upon the Mutiny, the artillery was abolished!

The ill-regulated minds and low intellectual level of our opponents in most of our small wars has enabled us to secure results which would otherwise have been impossible, even with the immense superiority of the weapons employed by us over the ruder implements of our foes. For it must be remembered that, though the advantage in weapons indisputably lay with us on every occasion, yet we could not always claim a like advantage in the matter of reckless personal bravery, or even in fighting discipline considered in its more technical aspect. Zulus, Ghazis, and Arabs have been our foes, and though we may not be willing to admit their superiority on any point, still, few who have seen any or all of these in action will fail to acknowledge a feeling of admiration, not unmingled with envy, for the fierce onslaught, the gallant bearing, and the absolute indifference to death of these fanatical and half-savage warriors.

On the other hand, when we compare our Army with the armies of Europe, we are at once met by a humiliating sense of our own moral and intellectual inferiority.

Conscription.—Continental armies draw their recruits from all classes of society without distinction, the result being that a comparatively higher average of intelligence is maintained, and the interest of the nation at large in the training and well-being of the army is ensured. In England, we pride ourselves on having a voluntary army, but let us not on that account lay the flattering unction to our soul that the majority of our recruits are therefore men fired with enthusiasm for a military career, or even possessed with a patriotic desire to die for their country. Their service is certainly voluntary in the sense that they have elected to earn their living by the profession of arms without any compulsion on the part of the State; but it is involuntary in nine cases out of ten, in the sense that they could not earn a living in any other way. The drafts which were sent out to some of the regiments at the Cape towards the conclusion of the Boer War would be sufficient to dispel any illusions which might exist on this point, and the percentage of these men who were “dismissed with ignominy from Her Majesty’s Service” within twelve months after landing is significant of what we may expect when our Army lights upon bad times.

Recruiting.—A comparison of the recruiting Returns for the years 1867 and 1886 is instructive as showing that with all our reforms, and the immense improvements in the conditions of service which have from time to time been inaugurated (see also Appendix), the general physical and intellectual standard of “those who aspire to wear the Queen’s uniform” has not altered appreciably in the last twenty years. It must further be borne in mind that the year 1886 was one of extreme depression in every branch of industry, so that the returns for that year are more favourable than could be expected to obtain as a general rule.

Year		1867. ¹	1886. ²
Proportion per 1,000 of enlistments.	Labourers	591·6	634
	Artizans	141·6	156
	Mechanics	174·1	121
	Shopmen and clerks	64·8	57
	Professions	6·6	12
	Boys	21·3	20
		1,000	1,000
Rejected as "unfit"		451·46	442

With such materials it is manifestly impossible to attain the same average standard of moral and intellectual discipline as our Continental neighbours have arrived at, though in some cases we may perhaps still compare favourably owing to a more advanced *national* development.

General Upton (U.S.A.), in his report to the United States' Government, says that for any plan of reorganization in the United States' Army to be successful, it must be based first on "the declaration that every able-bodied male citizen, between certain ages, owes his country military service, a principle thoroughly republican in its nature, as it classifies in the same catalogue, and exposes to the same hardship, the rich and the poor, the professional and the non-professional, the skilled and the unskilled, the educated and the uneducated." It behoves us then not to be unduly elated at possessing a volunteer army, but rather to sit down and count the cost. There appear to be three alternatives for us to choose from.

I. Conscription.

II. An honest attempt to meet the difficulty as it stands, and endeavour to so improve the social status and the conditions of service of the soldier as to attract a superior class in sufficient numbers to enable us to reject would-be recruits, for moral and intellectual inferiority, as well as for physical unfitness.

III. To acknowledge that, man for man, our Army is inferior to those of other civilized Powers, and that therefore we had better renounce all idea of armed intervention for the protection of our interests against foreign aggression.

The first of these alternatives does not recommend itself to the nation at large, and could hardly fail to become a purely party question, should it ever come within the range of practical politics; the last is utterly repugnant to all except a small and uninfluential party in the State; the second alternative is thus forced upon our notice for mature and deliberate consideration.

Good Class of Officers readily obtained.—Among the aristocracy and

¹ Royal Commission on Recruiting, 1867.

² Report of the Director-General of the Army Medical Staff for 1886.

upper middle classes, from which the Officers of the Army are principally drawn, the profession of arms is held in high esteem, and so generally is this fact recognized, that many men who would otherwise occupy a somewhat inferior social position are induced to embrace a military career, for the sake of the social advantages it may be expected to confer upon them. This being so, there is no lack of highly eligible candidates for commissions in the Army, though the attraction in the shape of emoluments is notoriously insignificant. It may be urged that there are many young men of good birth and education who can find no congenial employment, and that the Army offers to such a ready means of occupying their time, exercising their faculties, and giving scope to their ambition in a manner calculated to harmonize to a certain extent with their natural inclinations. This argument may readily be conceded, but how is it that similar reasoning does not hold good in inducing the lower middle class, the artisans and mechanics, and small tradesmen, in brief, the classes from which so large a proportion of our volunteer force is recruited, to join the rank and file of the Army?

Good Class of Recruits difficult to obtain.—The pay and prospect of advancement are immeasurably superior to what the great mass of the recruits could hope to obtain in civil life, and certainly appear sufficient to attract a better class than we are at present compelled to put up with.¹

It is true that the percentage of promotions from the ranks is small, but this, far from being a deterrent cause, is actually the result of the extremely small number of enlisted men who, by reason of their education, ability, and breeding, are fit subjects for such advancement.

Political Considerations.—The prejudice and dislike with which the civil population in bygone days regarded the Army, the jealousy and suspicion with which the acquisition of any power or authority by the Army has been viewed since the days of Charles I, and the actual opposition that was offered by so powerful a body as the Manchester school of politicians to the maintenance of any standing army at all worthy of the name, so recently as 1852, all this has left an indelible impress on our national life; the country appeared to regard the Army as something to be ashamed of, and kept in the background, a kind of inferior police force in fact, consisting principally of riff-raff, necessary, perhaps, but none the less objectionable on that account.

Social Considerations.—No man of any social standing whatever, capable of earning an honest living, and gaining the respect and consideration of those who formed the circle of his acquaintance, would have dreamt of "taking the shilling," so long as it was possible to provide food for powder and shot from the scourings of the cities, and to recruit the ranks in the country from among the useless, the worthless, and the dangerous members of the community. The advent of the Crimean War, and the enrolment of the volunteers,

¹ See Appendix.

brought about a change in public opinion, but it was of a somewhat negative nature, and no attempt was made on the part of our legislators to develop the faint enthusiasm thus produced into a truly national sentiment. On the other hand, the disgraceful practices of recruiting parties, the shipping off of batches of gaol birds as drafts for regiments on foreign service, and the rotten "bounty system," flourished with undiminished vigour, and we cannot wonder that the term "red-coat" was synonymous in the minds of most men (and women) with debauchery, drunkenness, and violence, and that no British matron could be found to boast that she had devoted her sons to the service of her country, if the career upon which they had embarked was that of military service; rather was it a cause for grief and consternation, for the Army was scarcely a reputable calling for a young man to embrace.

Matters have doubtless improved in this respect, and the ever-increasing importance of the volunteer movement has done much to familiarize the lower middle and working classes with the idea that the profession of arms is not only an honourable profession, but one in which the nation at large has a direct interest at stake; but old traditions are powerful, and prejudice is wont to take deep root; it therefore rests with the State to lend its powerful aid in undoing the evil that has been done, and by publicly recognizing the official status of the soldier, to improve *pari passu* his social status. These facts have been recognized by many able men, and Royal Commissions have from time to time made valuable suggestions and recommendations, which have to a great extent been acted upon (see Appendix), but only grudgingly and of necessity; reform has been forced upon the State from without, and not emanated from within. In 1861, and again in 1867, a memorandum of the Under-Secretary of State for War, Mr. J. R. Godley, was laid before a Royal Commission on Recruiting; it states that "there are indeed but two possible methods of obtaining a good and sufficient Army, and of keeping it permanently on foot: one is the method of conscription, the other the method of *making the Army a desirable profession for rational men*. . . . The efficiency of the Army is beyond all price, for not only our reputation and our honour, but our existence depends upon it. . . . But it cannot be too often repeated that in the end, and in some way or other, we must give the market price for every man we raise by fair means; and it is far better to look the fact in the face, and accept the inevitable consequences, than to endeavour by all sorts of devices to conceal it and persuade ourselves that we are getting a bargain. I propose, therefore, to increase the pay to the natural or market rate." In 1881 a Committee was appointed to inquire into the conditions of soldiers' service as affected by the introduction of the short service system. It is stated in the Report that "with short service the efficiency of our Army depends more than ever upon our having a sufficient supply of good non-commissioned officers, and to secure this the Committee are of opinion that it will be absolutely necessary to increase the pay; increased pay, with the advantages proposed, should tempt a better class of men to enlist,

with the view of gaining promotion, and making the Army a permanent profession."

The changes from time to time in rates of pay and pension will be found in the Appendix.

Leaving for the present the question of what yet remains to be done by the State, in order to induce a better class of recruit to join the Army, let us consider what can be done from within to ameliorate the soldier's condition, foster his ambition, arouse his sense of self-respect, and by raising the moral and intellectual tone of the individual, endeavour to bring about a corresponding improvement in the tone of the whole society, thus presenting to the country a picture of high moral tone and discipline, which should effectually remove the deep-seated prejudice which has hitherto done so much to keep a desirable class of men out of the Army.

Responsibility.—Responsibility, even in small things, has a direct tendency to bring out the higher qualities of a man's nature, but in order to be a working factor in the social system of an army it must be a living responsibility, carrying with it well-defined functions and powers. The absence of direct responsibility in our Army is a crying evil, permeating every rank; it is born of centralization, and fostered by red tape. A Commanding Officer is hedged around by a ring fence of restrictions, regulations, and returns; instead of the "habit of command" hardening his nerves, training his mind to form correct and rapid decisions, and rendering him a firm and reliable leader of men, he is fain to become "a good office man" first, and a passable drill instructor next; everything is "laid down" for him, all contingencies are provided for; his judgment in administrative matters is seldom exercised, inasmuch as painstaking officials at the Horse Guards have endeavoured to do his thinking for him, and it only remains for him to look up the section and the paragraph of the Regulations which will meet each case as it occurs, and refer any unusual question to "higher authority," a sufficient amount of correspondence must pass "through the proper channels," and a certain number of War Office forms must be filled up with becoming regularity. When the system has converted an energetic and enterprising individual into a perfect automaton, under whose administration (?) "everything goes smoothly," it has done its work; individuality has been crushed, and centralization vindicated; what more could be wished?

The administrative spring being thus contaminated at its source, it would be little short of marvellous were it to become clear and sparkling ere it reached the barrack-room: when the Commanding Officer is converted into an automaton, what chance is there for the non-commissioned officers and men to rise superior to routine and red tape?

Obedience.—It has been said with truth that "the first duty of a soldier is to obey orders," and it is scarcely assuming too much to say that the higher the intellectual level to which we can train our

¹ Report of Committee, p. 26.

soldiers, the more readily will strict obedience to orders be ensured. There are three causes which contribute to military obedience: the first and lowest is the *fear of punishment*, the second and more reliable is the *hope of reward*, the third and most trustworthy of all is a *clear comprehension on the part of the men of the value of discipline*. Napier says: "Military obedience is the result of reflection—not of blindness—and is invariably found to be most perfect among the most civilized nations."¹

Organization of a Battery of Artillery.—Perhaps the nearest approach to a well-organized distribution of responsibility in our Army is to be found in a battery of horse or field artillery. The Commanding Officer as a Major holds a position which in the cavalry or infantry he could not hope to attain before he reached the rank of Lieutenant-Colonel; this in itself is a stimulus of the most powerful, kind to junior Officers, who see the functions and responsibilities of command within measurable distance of attainment; moreover, each subaltern has a direct control over his own division, both in the matter of drill and interior economy; and the non-commissioned officer in charge of each subdivision² has a measure of responsibility which seldom falls to the lot of non-commissioned officers of similar rank in other branches of the Service. Even the "limber" gunner³ has a post of trust and responsibility in which he can distinguish or discredit himself. Again, the "lead" driver not only has his horses and harness to care for, but is selected for that position with a view to his exercising a certain amount of control over the whole team. Thus a feeling of emulation is easily awakened in the breast of the recruit, for he soon sees that the humbler posts of trust and responsibility are within his reach, and when he has once mounted the lowest rung of the ladder the very qualities which are most essential to his further success are those which the nature of his duties in themselves assist to develop. The visible effects of the superior training of the native artillery in the Indian Mutiny have already been alluded to.

Infantry Sections.—In the infantry the *section* has long been recognized as a convenient sub-unit for purposes of drill and fire-discipline, but for administrative purposes it is still in embryo; it is true that the section leader in some regiments is already a man of considerable influence among his comrades, but in the matter of general discipline and interior economy the system has hardly taken any hold, except perhaps at Aldershot. The chief difficulty in the way lies in the attenuated numbers of a battalion on a peace footing, which frequently renders it impossible for a section to have any existence except in name.

Let us bear in mind throughout the object for which we are striving; it is not merely to raise the moral and social tone of the

¹ Napier, p. 11.

² A subdivision consists of one gun with its wagon, detachment, trains, &c.: a division consists of two subdivisions.

³ The limber gunner has immediate charge of the ammunition and stores of the subdivision.

soldier, to cultivate his intelligence, and to foster the qualities of self-restraint and power of initiative; all these are in a sense only means to an end, the end being to attract a higher class of recruits into the Service, by raising that Service in the eyes of our countrymen to the position of an esteemed and honoured profession. Every step will make the work easier, but all must co-operate, and the first move must be from within; reflex action will soon bring other forces into play from without, which will give to the movement all the resistless power of a great social revolution.

Soldiers' Food.—Of the causes which contribute most directly to the maintenance of discipline, one of the most important is a strict attention to the quality and quantity of the soldier's rations. *Mens sana in corpore sano* should be our motto, and there is nothing so certain as that discontent and insubordination, together with an inclination to violence, drunkenness, and crime germinate all too readily in a mind which has a morbid bias, and it is equally certain that an unhealthy or ill-nourished body is directly provocative of a morbid condition of the vital functions, which faithfully reproduces itself in the ill-regulated impulses of a disordered mind. This question has lately aroused much public interest, and official action in the matter appears likely to bring about beneficial results; it is, however, greatly to be feared that the official enquiry will not really touch the root of the evil, though doubtless much benefit may result from it. That $\frac{3}{4}$ lb. of meat per diem is enough to maintain a man in first-rate condition, few will deny; but the meat must be of good quality and dressed in a wholesome and appetizing fashion. We are careful to provide a change of diet for our horses and dogs, and a *menu* of a monotonous character would not be tolerated for a moment in an Officers' mess. Let us apply the same natural laws to the preparation of our soldiers' meals, and evince a little more lively interest in the matter than is shown by the subaltern on duty with his perfunctory "Any complaints?" as he goes the round of the men's dinners. The troops are better fed at Aldershot than they are in any other quarters in the kingdom, because the Commissariat Department there has the entire control of subsisting the troops in its own hands, and is moreover in a high state of efficiency: no middleman comes between the soldier and his food, and the Government obtains the best possible value for the money expended. But in the more numerous cases where the troops are fed by contract, we are presented with a totally different state of affairs: the Government, in the first instance, accepts the lowest tender—about 5*d.* per lb.; concurrently with this the price for fair quality beef and mutton in Smithfield Market averages 6*d.* per lb.; the contractor, however, has to make his contract pay: he farms it out to a number of sub-contractors, who are as well known on the meat market as the sweaters of the East End are on the labour market. Lean Spanish cattle are bought at 4*d.* per lb., the contractor and his myrmidons make their profit; the prime cuts, such as they are, are served out to the married people, and the rest is cooked in the cook-house; the plates of the "duty men" are then piled up with the most succulent

morsels by the willing hands of their comrades, who know the hardship of night duty, and *what remains* must suffice for the "men's dinners." And a remnant it is in good sooth! Scraggy, tough, and unpalatable, small in quantity and poor in quality: it is from this remnant that our scientific men should deduce the number of "foot-pounds" of work represented by the soldier's ration.

The mischievous system of accepting "the lowest tender" is answerable for this state of things: a system which renders honest dealing impossible, and puts a direct premium upon bribery and corruption; yet where shall we find a political Hercules of sufficient moral stamina to slay this official Hydra? We fear that such a one is not bred in the atmosphere of party strife.

It would appear not unreasonable to hope that the increased consumption of wholesome food may be accompanied by a decrease in the consumption of stimulants; should this prove to be the case, there can be little doubt that a great gain would be immediately effected in the cause of discipline.

Supply of Food to an Army in the Field.—The larger question of the supply of provisions to our armies in the field is of a more intricate character, but considering the far-reaching nature of the issues involved, it is one which merits the most earnest consideration. The one great distinction between ancient and modern armies is the organization of the departments of supply, which, in providing for the daily wants of the soldier, have done more to mitigate the horrors of war than all other causes combined. Without them *discipline is impossible*, and an army losing its cohesion, like a swarm of locusts, sweeps over a country, leaving despair and starvation behind.¹

In 1870-71 the inferior discipline of the French troops was in no small measure due to the utter disorganization of the intendants, and it was no secret that the presence of the German troops was actually less dreaded by the French villagers than the proximity of their own countrymen in arms. The frightful demoralization of Napoleon's troops in Russia was in a large measure attributable to the same cause, and never has such terrible retribution overtaken maladministration.

It is not therefore merely the health and strength of our troops which depends upon the successful administration of the departments of supply, but the very cohesion and preservation of the discipline of an army must stand or fall by it. Much attention is being devoted to the subject, but it may be doubted whether the most excellent schemes will be of any avail in the absence of the actual organization required on such a footing as would enable us to put at least one Army Corps in the field, without having recourse to the desperate expedients with which we are familiar even in minor operations.

Military Music.—The effect of music on the march and in battle is very marked: the wearied soldier, staggering along under the weight of his pack, blinded with dust and parched with thirst, listens with

¹ General Upton's Report, p. 95.

sullen indifference to the voice of his Officer urging him to "step out," when suddenly the cheery strains of his regimental march fall upon his ear, infusing him with new vigour. The Highlander who has had all the "go" knocked out of him by a tedious flank march, the object of which he cannot understand, is beginning to get distrustful of his leaders, when the inspiring notes of the bagpipes in a moment bring about a change from an attitude of sulky suspicion to one of burning enthusiasm; his eye is bright, and his head erect, he feels that the fight is in the air, and that he will be in the thick of it at the critical moment. Who shall depict the change which was wrought in a moment in the feelings of the beleaguered garrison of Lucknow when they heard the strains of "The Campbells are coming" float to them on the fresh autumnal air, announcing the approach of Sir Colin Campbell's relieving force?

The French, after 1871, tried the experiment of abolishing regimental bands, but they soon reverted to the time-honoured institution, even though it was regarded as a relic of despotism. It is with satisfaction that we note the recognition which military music meets with at the hands of our own authorities, and that it has its rôle assigned to it in the latest instructions for the attack. "On reaching the firing line, the second line will double through it with cheers, carry the position at the point of the bayonet, *the drums beating and the bugles playing.*"¹

It is in truth at a supreme moment such as this that the success of the enterprise may be assured by the inspiring notes of "the charge," when otherwise discipline might have wavered, and hearts failed before the deadly fire of the foe, delivered from a carefully prepared and well selected position. The elation of spirit and elasticity of step induced by the sound of music are factors which cannot be overlooked, either in maintaining the commonplace discipline of the march, or in inspiring the frenzied enthusiasm of the charge.

It may be safely averred that military music might be made to play an important part in rousing a widely extended feeling of martial enthusiasm throughout the country: the time has gone by for keeping our troops in holes and corners as if we were ashamed of having a standing army; our object should be to put the country in touch with the Army, and by a judicious parade of "the pomp and circumstance" of war, help to awaken the dormant instinct of fighting patriotism which lurks unsuspected in many a British breast. Many of our large towns and country districts never see such a thing as a body of troops on the march, with all the attendant pageantry of glittering arms, smart uniforms, and soul-stirring music; if the attractive side of soldiering were brought home to our countrymen, aye, and countrywomen too, possibly we should not have to wait long before a manifest improvement became visible in the class of young men "aspiring to wear the Queen's uniform."

Recreation.—In the interests of discipline, it is of the utmost importance to promote such amusements among the men as may conduce

¹ Sir A. Alison's Memorandum to the Troops at Aldershot. Sept., 1898.

to a cheerful frame of mind. The healthful intercourse between Officers and men engendered by cricket, shooting, and athletic sports of all kinds, together with the *esprit de corps* which is aroused by regimental competitions, gives to our Army a force peculiarly its own. "In India this subject receives much attention:—the object of all regimental institutions is to deliver the soldiers from idleness, and give them profitable employment and recreation; A holiday every Thursday has recently been given to them for the purpose of encouraging shooting and other outdoor sports. Notwithstanding the loss of time, it is maintained that discipline is not impaired, but on the contrary improved, through the increased cheerfulness of the men."¹

Physical and Technical Aspects of Discipline.

All training in peace-time should have a direct bearing on the requirements of war. This may appear to be a truism, but in spite of the strides that have been made of late years in the right direction, we are still very far from realizing the full significance of this elementary truth. The most radical changes in furtherance of this object have recently been inaugurated in the German Army, but these changes are of a far more sweeping character than would be possible under any except a practically autocratic military government. The leading idea in the new German drill regulations is not merely to subordinate all military exercises to the actual requirements of war, but strictly to limit the instruction to such forms of drill as can be learnt with readiness and precision, and practised with certainty in the field.

Training of Instinct by Habit.—The *instinct* thus acquired by habit can be depended upon in the most trying circumstances, to a far greater degree than any carefully reasoned out line of action produced by conscious cerebration. To learn alternative methods of arriving at the same result under slightly different circumstances may be a valuable exercise for the reasoning faculties, but reason backed up by experience tells us that the man who hesitates is lost, and it is far better for men to be so trained, that they may be impelled to act upon a common impulse in any given situation, even though the action so taken may not be the best possible under the circumstances, rather than that they should be moved by no impulse at all.

What to do, and How to do it! The whole question is contained in these few words. "How to do it" must be the burden of instruction in peace-time, and no efforts should be spared on the part of the Officers to inculcate the lesson in all its bearings upon the men, in such a fashion that when they are told "what to do" in the face of the enemy, there may be no doubt or hesitation, no waiting for detailed instructions as to how the end in view is to be arrived at.

Control by Training and not by Words of Command.—It is not meant here to advocate looseness of control on the part of the Officers over

¹ General Upton's Report, p. 68.

their men, but rather that the soldier should be so trained that obedience to the *will of the Commander* should be a common instinct, animating Officers and men with a kindred spirit, and creating an irresistible impulse upon any given object which could never be imparted by mere words of command.

General Napier gives a striking illustration of the difference between the blind obedience of the well-drilled Russians, and the dashing impetuosity of the more intelligently-trained British troops under the command of the Duke of York. "A redoubt was to be carried by storm, and he ordered three Russian regiments to make the attack. They marched up steadily under a heavy fire, and found a deep ditch with palisades in it: the Russians halted, looked at the obstacle for a few seconds, and then retired. A second and a third time these Scythian automatons were marched up to the attack, and again and a third time they retired with great loss; brave, stupid, and *blindly obedient*." Three *companies* of British light infantry were then despatched with the order to "take the redoubt. . . . The Englishmen advanced at a rapid rate, ran up to the edge of the ditch, halted an instant to contemplate the unexpected defences below, and then intrepidly leaped down; away went the palisades with a crash, while cheered by their own animating shouts, the victors sprang upon the parapet and the redoubt was taken! Here we have real obedience. The redoubt was to be taken. The Russian slaves did not take it. The English freemen *did* take it. Their obedience was perfect; it was not blind, it was glorious!"¹

What we should endeavour to aim at is to assimilate the conditions under which our small manoeuvres and field-days are organized to the actual conditions of war, and thus render our troops familiar with the unforeseen contingencies which are inseparable from all military operations. We may be pardoned for taking another leaf from ancient history, in referring once more to the Spartan system of military training, in which the soldier "was presented in the course of his education with most of the contingencies which happen in war; and from this cause perhaps, when in action, he often seized the reason of a thing *as it were by intuition*."²

It has been said that we have made great strides of late years, and this is true, both as regards simplification of drill and adaptation of military exercises to the requirements of war. The work done at Aldershot within the last twelve months being of a character which defies criticism: above all the following innovations stand out in clear relief, and stamp the authors of them as men in whose keeping the future of the British Army is secure:—

1. *New Attack Formation for Infantry*.—The new attack formation for infantry is not only a model of simplicity and clearness, which every soldier can understand, but it is based upon deep reflection and sound reasoning; the duties of the component parts of the attacking force are simply and forcibly put, and it is pointed out

¹ Napier, p. 12.

² Jackson, p. 37.

that "the supports and reserves keep the firing line at its most efficient strength . . . and encourage those engaged in front by the feeling that there is a body of comrades following to assist them."¹ How well this meets Lord Wolseley's view of the most severe test to which the courage of a soldier can be put: "Will my men follow me?" is the question which is never absent from the Officer's mind; and so it is with the first line of the attacking force advancing across the open at a rapid pace in skirmishing order: the feeling of confidence engendered by the shoulder-to-shoulder formation of earlier days has been lost, and it must be replaced by the assurance that supports and reserves are following, and that when the fire crisis arrives "the second line will double through the first, and carry the position at the point of the bayonet."²

But in order to ensure this feeling of confidence, the practice of the attack in peace-time must be habitual: the skirmishing line must be accustomed to the never-failing appearance of the second line at the decisive moment; there must be no doubt in the minds of Officers and men as to whether the required support will or will not put in an appearance at the critical juncture; it must be so much a matter of course that the distracting doubt can never for a single instant throw its shadow between the first line and the objective upon which its whole soul should be concentrated. Most of us will acknowledge that even in peace manœuvres and at field days this doubt *does* arise, and that a feeling of anxiety as to the successful pushing home of the attack will not infrequently assert itself. Now if this be the case in a matter of drill in peace-time, where the worst that we have to fear is a rebuke from the General or censure from the Colonel, what would take place in action, when issues of the gravest importance hang upon the success of a well-delivered assault? Doubt will breed hesitation, the men will begin to look about them and fire wildly, the highly strung nerves will become flaccid, and the energy of the attack will have expended itself before the objective point is reached: discipline can be maintained at high pressure only for a short time, and if success be not assured before the inevitable reaction of nervous exhaustion sets in, panic and disaster will supervene.

Length of Bayonet.—Great stress has been laid upon the advantages of a long bayonet, and we have always made a point of giving our men longer bayonets than other nations have deemed necessary; as though battles were fought by two lines of men standing opposite to each other and prodding at their foes with the carefully regulated motions of the bayonet exercise, the successful issue resting with those who have the advantage in length of cold steel. Let us grant for the sake of argument that a hand-to-hand fight with the bayonet on a large scale may possibly take place; which side is likely to get the better of the encounter, the one which has marched and manœuvred all day, carrying a long and proportionately heavy bayonet, or the one which has had the advantage of a lighter weapon

¹ Sir A. Alison's Memorandum to the Troops at Aldershot. Sept., 1888.

² Sir A. Alison's Memorandum.

to carry, and is consequently able to use it with greater dexterity and energy when the march, the manoeuvre, and the attack formation have culminated in the hand-to-hand encounter? The question of a light weapon is of importance as regards the physical strain which the soldier has to bear, but beyond this the discussion is purely academic, inasmuch as battles are not won by bayonet thrusts, but by an undaunted determination to go for your adversary without pausing to count the cost, and this determination is the offspring of discipline.

When the attack formation is practised throughout the Army with the same assiduity as "marching past" or "advancing in review order" we shall feel that our men are being trained in the discipline which is required for war, and that the drill-ground is indeed and in truth the nursery for the battle-field. The importance attached to purely parade movements in the British Army was commented upon by some of the Continental representatives at the Delhi Camp of Exercise, in terms the reverse of complimentary.

2. The *night operations* which have recently formed so important a feature in the Aldershot curriculum are certain to be of the highest value. Those who have taken part in night operations on active service, even on a small scale, cannot fail to have been deeply impressed with the "jumpy" feeling which more or less seems to pervade all ranks, under the novel and undoubtedly trying conditions by which they find themselves surrounded. There are not wanting instances of how readily this "jumpy" feeling may be converted into panic, and military authorities appear pretty well agreed upon the hazardous nature of such undertakings, while at the same time recognizing their ever increasing importance.

But why should "night operations" be so extremely hazardous, why are men's nerves in such a state of unusual tension, and why should apparently well-disciplined troops deteriorate so readily into an undisciplined mob? There are several minor causes which it is not necessary to enumerate, inasmuch as they are well known and recognized; but the dominant cause is *want of practice!* Neither Officers nor men are accustomed to carry out the simplest operations at night, they are unable to recognize the ordinary landmarks which in daylight are familiar objects, they cannot distinguish a horse from a cow, or a stunted bush from a crouching Zulu; the eye has never been trained, and the confidence which arises from *use* is never acquired; a nameless dread of the unknown saps the very foundations of discipline, and causeless panic follows quickly upon a disturbed and morbid state of the reasoning faculty; the most commonplace occurrences assume an exaggerated importance, and ordinary risks are distorted into dangers of the most menacing proportions. The remedy for all this lies in accustoming troops to perform night operations of every description under varying conditions of atmosphere and ground, until use, which is second nature, shall have taught them to regard such operations merely as a necessary and not unusual feature of their military training. It will be objected by some that exercises of this description are too harassing in their nature to be made the

subject of frequent instruction; the same objection might be applied with equal force to many of the conditions of military service; but if it be granted that night operations are likely to be an essential feature of almost every future campaign, then we must face the question boldly, and so conduct our peace-training that it may accustom Officers and men to the requirements of war.

It is, of course, most desirable to avoid harassing troops unnecessarily, and every effort should be made to render the work in question as little distasteful as possible, by careful provision for the men's bodily comforts, relaxation of routine duties, and when feasible a reduction of the night guard, picquet, and sentry duties; above all, the Officers must not look upon it as a "bore," they must, on the other hand, use every effort to impart an air of reality to the work, and thus arouse and sustain the interest of their men; hard work is essential to success in every walk of life, and as soon as Officers show a disposition to shirk hard work and avoid disagreeable duties, the discipline of the Army begins to suffer. Zealous performance of all duties by the Officers is accompanied by cheerful acquiescence in their necessity on the part of the men; "every hardship which appears useless in the common-sense view of the soldier annoys him, but he will cheerfully bear even greater hardships when he can understand the necessity."¹

Unusual efforts, however, demand unusual concessions, and a little latitude in the matter of short furloughs and other small indulgences, during the "drill season," might be conducive to a general appreciation of the advantages likely to accrue from a well carried out system of night drills.

3. The latest and not the least practical innovation is the "system of casualties" on field-days, and if the system be carried out thoroughly and honestly throughout the Service, there is every reason to believe that enormous advantage may be expected to accrue from it. Not only is it useful in accustoming all ranks to the sudden assumption of responsibility in the field, and the performance of functions appertaining to a rank above them at critical moments; but it is likely to prove a valuable means of bringing to the front both Officers and men who possess in a high degree the qualities of presence of mind, quick perception, and bold initiative. It is, in fact, a training of the highest order, for it gives Officers a means of accustoming themselves to the unexpected discharge of new and generally higher duties, and commanding men over whose actions they had previously no control, and it accustoms all ranks to the unhesitating transference of their obedience at a juncture when the maintenance of discipline may be everything, and any rude shock to its supremacy may bring demoralization and disaster in its train.

Desirable though it may be thus to accustom Officers and men to the unexpected changes of command which must inevitably occur *in all ranks* when in action, it is not to be inferred that the voluntary employment of small detachments from various corps is to be

¹ Goltz, p. 23.

encouraged on service; necessity is the only justification for such a proceeding, inasmuch as it strikes at the very root of *esprit de corps*, and directly enhances the very risks which it is desired to minimize by the "casualty system." "It is of primary importance that the formations to which men have been accustomed in peace should be preserved in war, for their disruption will always have a prejudicial effect on discipline, and the mischief thereby caused almost always outweighs the advantages which may be derived from breaking up tactical units so as to increase their number."¹

Troop and Company Training.—The training of troops and companies under their own Officers for a period of one month every year is an institution of the greatest value to all ranks in the cavalry and infantry; the excellent programme issued for the guidance of Officers commanding troops and companies leaves little to be desired, except the hearty co-operation of all ranks in endeavouring to secure as much advantage as possible from the work done during the period. It is of supreme importance that Officers should not look upon the programme for the military training as "something to be got through," and the diary as "something to be filled up;" the programme is a guide which will assist a zealous Officer to arrange the time at his disposal in a systematic manner, and get the full value for himself and those under him out of the exceptional advantages placed at his disposal; the diary is the official record of the work done, and should be a source of pride and satisfaction to all concerned when completed; moreover the keeping of a diary under such conditions is a most valuable exercise, and an Officer of zeal and intelligence can make something more of it than a mere official report to show that he has not omitted anything which was laid down in his instructions. It is to be regretted that the artillery should not be associated with this military training; subaltern Officers would gain great advantage from exercising their divisions in detached duties for the earlier part of the training, and acting in concert with a troop of cavalry or company of infantry during the latter portion of the time.

Use of Arms.—The importance of assimilating the conditions of our field exercises in peace to the exigencies of war has been already alluded to, as accustoming Officers and men to the requirements of active service; it is, if possible, of still greater importance to render every individual so familiar with the practical use of his weapon under these conditions that he may be imbued with the perfect confidence which springs only from habitual and successful employment of his arm, and which no amount of manual exercise or mere target practice will instil. It must be constantly impressed upon men that a well-disciplined body of troops accustomed to act in unison, and thoroughly capable of handling their arms, is practically invincible. Nor is this far from the truth; for provided that such a body be intelligently handled, whether in the attack or on the defence, it will most assuredly succeed in the work that lies before it. The ease with which the groups of German infantry repulsed the furious onslaughts of the French cavalry at Woerth, the defeat of the French infantry

¹ Goltz, p. 10.

by the German artillery at Amanvillers, and the brilliant but costly success of the German cavalry at Mars-la-Tour are instances which will ever live in the page of history. Not less glorious are some of the records of our own troops in recent as well as more remote wars, nor less instructive are some of their failures.

The training of our men to the use of their weapons in each arm of the Service becomes a matter of greater importance in proportion as the potentiality of the weapon is increased. We have machine-guns capable of discharging 600 bullets from a single barrel in one minute, and magazine-rifles capable of making 15 per cent. of hits in the hands of good marksmen at a range of 2,800 yards. To employ the former to advantage, a cool head, steady eye, and practised hand are required; and to render the fire of the latter fully effective "fire-discipline and steadiness are essential, and the careful training of company and section leaders and all junior non-commissioned officers is becoming of more importance every day. . . . With ill-disciplined troops, not trained in fire-discipline, and badly commanded, a magazine-rifle might prove a curse instead of a blessing."¹

Marching.—In England the artillery is the only arm that gets any practice in marching worthy of the name, the regular gun-practice and periodical reliefs furnishing all that is required during the summer months; the "flying columns" periodically sent out from Aldershot afford an opportunity on a small scale to all arms of practising and testing their marching powers. During the winter, however, considerable benefit might be derived from a regular system of forced marches arranged in concert with the three arms upon a well-considered strategical basis. A twofold object would thus be gained, the more mobile cavalry and artillery benefiting more especially by the practice in varied strategical combinations, and the training of their horses in wind and limb; while the infantry would not only gain in actual marching power, but would learn to form a far higher estimate of its own capabilities than would be the case if they were allowed to remain comparatively dormant. "Exertions which previous experience has taught to be nothing out of the common way are more easily borne than those of which we have no previous knowledge."²

The march of Sir Frederick Roberts from Kabul to Kandahar was accomplished without mishap, because the men were in a high state of physical training, and most of the Officers had some experience of transport work. The march of the IInd German Army from Metz to the Loire, though commenced by easy stages, was productive of numerous casualties on account of the hardships the men had recently been exposed to, and the loss of marching power consequent on the recent siege operations; after the first week, however, although "the marches became much more severe, they did not produce the same bad effects, because the men gradually recovered their tone and the habit of marching."³

¹ Colonel Slade's Report.

² Goltz, p. 32.

³ *Ibid.*, p. 33.

On active service soldiers should be taught to look upon an average of 20 miles a day for a period of two or three weeks as nothing out of the way; Murat, in his march from Jena, *via* Prenzlau, Zirbeck, and Posen, to Warsaw, kept up this rate of marching for six weeks! The army whose marching discipline is most perfect starts on a campaign with heavy odds in its favour. The most brilliant combinations will fail unless troops are in the right place at the right time, and Officers of all ranks cannot be too deeply imbued with the idea that if they want their men to excel in great things, it is their first and most important duty to see that they are not unnecessarily harassed and worried about small things. A soldier can stand a great deal if he realizes its necessity, but discipline can scarcely be maintained under the severe trials of a campaign if unnecessary fatigue and hardship have to be endured. There are two most conspicuous dangers which confront us in this connection:—

1. The deeply-rooted conviction, which is ineradicable in some minds, that troops must parade hours before they are required to move off, in order that the innumerable petty inspections may take place before the arrival of the Commanding Officer. The men are wearied, both physically and morally, before the real work of the day commences; for it is not so much the number of miles marched, but the length of time men are kept under arms which wears them out; and not only so, but the wearisome delay between "turning out" and "moving off" robs the enterprise in view of half its freshness, and blunts the keen edge of warlike ardour; the spirits of the men are dejected, instead of being buoyant, and the motive power is dissipated. On service, the same results will ensue from apparently different causes; the men will not be kept standing on parade hour after hour for the purpose of maintaining intact every link in the chain of inspection, but an overpowering anxiety will assert itself to have the troops under arms long before the time has arrived at which it would be necessary to start for the appointed rendezvous, or to take the allotted place in the column of route. The bivouac may, perhaps, be a mile from the point on the road where a given brigade has to join the marching columns at 8 A.M.: the brigadier orders his brigade to parade at 7; the Colonels order their battalions to be under arms at 6:30 for their regimental parade; the company Commanders, influenced by the contagion of over anxiety, inspect their companies at 6, and the men themselves are turned out at 5:30: thus, not only do the troops lose nearly two hours' rest, which their efforts the previous day may well have earned for them, but the time so lost is spent *standing under arms*, an occupation which unfits them at the outset for the trials of the coming day. The man who worries himself will worry everyone around him, and a Commanding Officer with an ill-balanced mind, in occupying himself too fully with unimportant details, generally fails to grasp the essential and salient features of the circumstances by which he finds himself surrounded.

2. The second danger which has to be avoided, if we would keep our men in good fettle on the march, is an over anxiety for security, keeping the troops in a state of restless and exhausting preparation

for attack from all possible quarters. Now if the reconnaissance service be properly carried out, there can be no necessity for splitting up the marching columns to form patrols, flankers, scouts, &c. Troops on the march are perfectly ready to deploy for battle; the breaking up of a force into small detachments, for the purpose of forming an ideal marching formation, emanates from the study and not from the field: what is required is to keep the marching columns intact and free from harassing duties; special troops are told off for reconnoitring, and if this important function be properly carried out, there is no need for any anxiety as to the security of the march. In order to create a well-recognized and uniform system of carrying out marches in an enemy's country, the method already proposed can be made available in time of peace, special attention being devoted to taking immediate action upon the receipt of reconnaissance reports, and bringing our forces into such formations as the nature of the report may appear to dictate. The combinations which might occur are of sufficient variety to offer the widest scope for the exercise of presence of mind and coolness of judgment in the Commander. The object of the march must be kept steadily in view, and the reconnaissance reports rapidly sifted and arranged, in order to arrive at a correct conclusion. To what extent is the march likely to be interfered with? Is it a mere demonstration on the part of the enemy to harass the marching columns, or is a serious attack threatened? Will it be advisable to detach a few troops to make a counter-demonstration, or should a good position be immediately selected in which to receive the threatened attack? Is it desirable to bring on a general engagement, or to avoid one? These and a hundred other questions must be decided at short notice by the Commander, and on his prompt and correct estimate of the requirements of the situation everything will depend. If these things are studied and *practised* in peace, they will not be new and strange in time of war: Commanders will feel confidence in their power to deal with each situation as it arises, and will not endeavour to hedge themselves around with elaborate and harassing precautions which can have no other result than that of unnecessarily distressing the troops, and rendering them less able to cope with the enemy when they meet him.

It must not be concluded that careless indifference and reckless exposure are advocated; but it is desirable to draw a clear distinction between the functions of the two bodies of troops which form the component parts of an army; the object in view for the marching columns is to spare them all unnecessary fatigue, to husband the men's physical strength, and keep their *morale* unimpaired, to keep the objective clearly before their minds, and thus while advancing rapidly upon the enemy's position to enter upon the decisive ordeal of battle with impetuosity and ardour. The object in view for the reconnoitring troops is, on the other hand, *not* to spare themselves for the fight, but by the unremitting exercise of a vigilance which makes heavy calls on mind and body alike, to preserve the marching columns from all anxiety as to their security.

Details affecting Discipline on the March.—"There are no occasions

upon which the discipline of a regiment becomes more conspicuous than on the line of march, nor any on which the attention and vigilance of every Officer in maintaining order and regularity are more especially requisite."¹

The question of carrying the men's packs is one which has frequently to be considered; as a rule, the soldier should be accustomed to carrying everything himself which is laid down by Regulation as part of his personal equipment; but if extraordinary efforts are demanded, Commanding Officers must use their discretion in the matter of relieving the troops of a portion of the weight ordinarily carried. If once men begin to feel that they are being called upon to perform impossibilities, discipline will be at an end; the soldier thinks that his Officers cannot or will not realize the hardships which they so cheerfully call upon him to endure, the bond of sympathy ceases to exist, and sullen resignation is soon followed up by open insubordination. In most of our small wars these facts have been taken into consideration; thus in Sir Frederick Roberts' march from Kabul to Kandahar, the rate was $15\frac{1}{2}$ miles a-day over broken country, and the weight carried was $33\frac{1}{2}$ lbs.²

The Royal Irish covered 120 miles in six days in their march to Metemneh, and carried 38 lbs.³

The Germans have lately reduced the weights carried by the soldier from 64 lbs. to 52 lbs., and at the same time increased the average rate of marching for peace manœuvres from 25 to 32 miles a-day. The English soldier's normal load is a little over 62 lbs., which is about the average for all the Continental nations, exclusive of Germany.⁴

Individual Training.—The physical and technical training of the individual are of considerable importance, but any attempt to develop extraordinary excellence in the individual may not impossibly result in the indifferent development of the whole body; to march well and to shoot well are qualities of the highest order in the soldier. It is not, however, the shooting of individual marksmen, or the marching of a few trained athletes, which wins the day, but rather the uniform action of entire bodies of troops, working harmoniously under the will of the Commander. Above all, it must be clearly understood that though our efforts should be largely directed towards cultivating the moral individuality of the soldier, anything which tends to *independent* training should be carefully avoided. "The word 'independent' should be cut out of every regulation and drill book. Every action can be classified under the head of 'individual' and 'mutual' action; the independent training of men is an evil that cannot be too strongly repressed."⁵

Tacitus records the formation of a Roman legion composed entirely

¹ Wolseley's "Pocket-book," p. 336.

² Journal R.U.S.I., vol. xxv, p. 315. Extracts from Divisional Orders by Lieut.-General Sir F. Roberts, p. 19.

³ Journal R.U.S.I., Callwell's Prize Essay, vol. xxxi.

⁴ Journal R.U.S.I., vol. xxxi, p. 903.

⁵ Mayne's "Infantry Fire Tactics," p. 418.

of gladiators, and draws attention to the fact that in spite of the extraordinary physique and fighting power of every man in the ranks, it could not compare in actual efficiency on service with the legions which were filled up in the ordinary way.

A fighting unit is not a mere aggregate of fighting individuals, it must have an individuality of its own. This can be called into existence only by applying the lessons of training and discipline to it as a corporate entity, and sustained by ever subordinating the instruction and development of the individual to that of the body of which he is merely a member. By this means not only is a higher average of excellence ensured, but a powerful *esprit de corps* is fostered, which encourages the weaker members to renewed exertions for the credit of the corps, and incites the leading spirits to unceasing efforts to raise the standard of excellence yet higher.

Guards and Sentries.—Night guard is one of the most trying duties which a soldier has to perform; it is, moreover, a duty which is viewed with dislike and undertaken with reluctance, especially in peace-time, when the necessity is not always apparent. It has been stated that of late years night duty has been considerably reduced, but the statement is scarcely borne out by the Returns, which show the number of "nights in bed" which fall to the soldier's lot in most of our garrison towns. It is possible that in many cases there has been a distinct reduction effected, but inasmuch as this reduction has merely followed upon a diminution in the effective strength of battalions on a peace footing, the net result leaves us very much where we were before.

From being accustomed to a certain number of guards and sentries, we have come to look upon them as indispensable, and many Officers will be found to uphold the theory that it is an excellent training for the men. A necessary training it undoubtedly is, but it is one which should be kept down to the lowest point consistent with the maintenance of good order; for unlike other drills and exercises in time of peace, the habitual performance of sentry duty does not increase the efficiency of the sentry or develop the faculties of vigilance and alertness which are essential to the satisfactory performance of his functions on service. There is nothing more certain than that familiarity breeds indifference and contempt for what cannot fail in peace-time to become a more or less routine duty. It does not require an adept in the art of "breaking out of barracks" to elude the vigilance of a sentry, neither would the most indifferent thief hesitate to back himself heavily to steal anything, from a horse to a rifle, under the very nose of the guard or picket. A remarkable illustration of this was furnished by the case of a sentry at Gibraltar, who was found "asleep on his post" by the Officer on duty. The non-commissioned officer of the guard was ordered to take his rifle away without awakening him, and to return to the guard-room for the "relief" after completing his rounds, upon which the defaulting sentry was to be marched back and placed in confinement. Upon the return of the Officer with the non-commissioned officer and relief, the sentry was found walking about "in a brisk and soldier-like manner,"

with his rifle in his hand! Years afterwards the soldier took his discharge, and at the urgent request of his Officer told "how it was done." Immediately after the departure of the Officer he had awakened to a sense of something unusual, and missing his rifle had promptly divined the cause; he clambered down the rock by a way he had been accustomed to take when birdnesting, and reached the guard-room before the non-commissioned officer; he remained in hiding until his rifle had been deposited in the guard-room, the relief marched off, and the guard had resumed their slumbers, and then stealthily making his way to the door, abstracted the rifle, and rapidly regained his post, where he was found by the non-commissioned officer on his arrival by the more circuitous path, wide awake, in possession of all his faculties, and above all of his own rifle!

A sentry who sleeps on his post on service is liable to the punishment of death; in peace-time the same crime is not infrequently punished by a few days' confinement to barracks.¹ How then can peace training in this case be any preparation for war? It must indeed be the reverse, for the frequent performance of a duty which, in nine cases out of ten, is a mere matter of routine, only teaches the soldier to look with indifference upon the same duty in the field, though in the latter case it may be of vital importance to the safety of an army.

Fatigues.—Everything which takes away men from their drill is detrimental to their military training. This has been recognized so far that during the annual squadron and company training the men are struck off all other duties; but this is done at the expense of the regiment, which is employed during the period of training in furnishing the usual fatigues, guards, escorts, &c., with reduced numbers, and thus regimental or brigade parades become an impossibility. That this should be so is much to be deplored. The zeal of Commanding Officers and the spirit of regimental discipline is impaired to a serious extent, and the evil cries loudly for a remedy. The remedy is to be found in a determined and united effort to grapple with the difficulty; guards must be reduced, and fatigues brought down to a much lower minimum than now obtains. The latter question can scarcely be discussed here in detail, but if an instance be required where a saving of labour might be effected, the absurd system of "coal-carrying" will furnish it; to employ a number of men with tin pannikins in drawing and distributing coal to the various barrack-rooms, cook-houses, &c., instead of furnishing each regiment with a small hard-cart which would enable one-tenth of the men to do the work in half the time, with a quarter the labour, is such an evident misappropriation of force that it needs no comment. A procession of coal-carriers is a satire on the common sense of our administration!

¹ The latest instance of this crime which came under the writer's notice was in August, 1888. The prisoner was weighed off by the C.-O., the punishment awarded being 10 days' C.B.

Penal Aspect of Discipline: Military Law.

The power of law in promoting efficiency and maintaining a high standard of discipline in an army is set forth with remarkable clearness by Herodotus in his admirable analysis of the fighting value of various races. Of the Lacedæmonians he says: "When they engage in single combat they are certainly inferior to other men, but *in a body* they are not to be equalled; . . . the law is their superior; . . . they are obedient to what it commands, and it commands them never to fly from the field of battle, whatever be the number of their adversaries. It is their duty to preserve their ranks, to conquer, or to die."¹

In considering the question of crimes and punishments, we are confronted at the outset by the manifold aspects under which the same crime may appear, meriting in each case an entirely different degree of punishment. We may, in fact, divide crimes broadly into two categories, moral and military, subdividing the latter into those which are committed in peace-time, and those committed on active service. With social law we have little or nothing to do; the military man who commits offences against society brings himself within its cognizance, it is true; but inasmuch as social law has for its object the gradual development of a rational and moral state of society, by the steady application of certain principles calculated to assist the natural process of evolution, it can have little in common with military law, the object of which is to bring the will into subjection, and to secure implicit and instant obedience under all circumstances. The most serious military crimes are usually those against discipline, not those against morality; for whereas, in the former case, an apparently trivial act of disobedience on the part of an individual may place a whole army in jeopardy, in the latter case probably little or no injury is inflicted on the community at large, and the criminal is an object of execration more by reason of the crime committed, than on account of the injury inflicted on society. "Military obedience must therefore be enforced by a more powerful stimulant than that of social law; a stimulant so strong as to overcome the natural inclinations of men, and produce instant obedience under all circumstances, however trying they may be."²

Thus, in civil life a man considers himself grossly wronged by another, or perhaps he is bullied by one placed over him, who, "dressed in his petty brief authority," makes life unbearable to those under him: if the injured man should take the law into his own hands, and administer a sound thrashing to the object of his aversion, he is probably fined "forty shillings": in military life, a soldier under similar circumstances gives a non-commissioned officer a black eye; this is not a common assault upon the person of the non-commissioned officer, it is a dire offence against discipline, and must be punished with sufficient severity to impress upon all the enormity of the offence.

¹ Beloe's "Herodotus."

² Napier, p. 10.

Again, the different light in which the same military offence may be regarded according to whether it be committed on service or in peace-time might be illustrated by the crime of desertion; in the latter case, three months' imprisonment might be considered an adequate sentence, in the former, the deserter would almost inevitably be shot.

Administration of Military Law in Peace-time.—Military Law is administered by the Commanding Officer or by a court-martial, the jurisdiction in either case being strictly limited and clearly defined. There has been a growing feeling of late years that the sentences of courts-martial are frequently too severe, and a corresponding desire to place more power in the hands of Commanding Officers: it is undoubtedly an instance of great moral progress in the Army to find that whereas in former years the power of the Commanding Officer was limited for fear that he might abuse it, in the present day, on the other hand, there is a strong tendency to give greater power to the Commanding Officer with a view to securing a more satisfactory administration of justice than can be obtained at the hands of a court-martial. A court-martial can only take cognizance of the evidence brought before it in determining its *finding*; in considering its *sentence* it must be guided by the regulations drawn up for the purpose, and influenced to a certain extent by the documentary evidence as to character and previous convictions. A Commanding Officer, on the other hand, if permitted to exercise considerable discretionary power, both as to the degree and the mode of punishment, stands in a more advantageous position; he knows the character and disposition of the prisoner intimately, the circumstances which led to the crime and its probable consequences as affecting the discipline of the regiment are before him as he considers the case, and he is able to administer justice in the *spirit* of the law, whereas the court-martial finds it almost impossible to do more than stick conscientiously to the *letter*.

Some years ago, a certain regiment obtained an unenviable notoriety for disorderly conduct in the garrison town where it was quartered: a picquet had to be sent out nightly to maintain order and bring in defaulters; this duty fell heavily on the well-behaved men of the regiment, and instead of having the desired result, appeared to increase the evil: the Commanding Officer then determined only to employ men upon this duty who had been convicted of disorderly conduct, breaking out of barracks, or being late for tattoo: the experiment was successful, and in a few weeks all crime of this description had practically ceased. At the next inspection, however, it was pointed out that the course pursued was not in accordance with military law, and that in future such offences must be dealt with in strict accordance with the Queen's Regulations!

A similar case occurred recently in one of the Colonies, during an epidemic of small-pox in the villages surrounding the quarters of a certain Highland regiment. The men were ordered to keep within certain bounds, but several cases of disobedience occurred, with the inevitable consequence that the delinquents had to be kept in quarantine with a guard over them, for fear that they might have brought

infection with them: this quarantine duty became at last so serious an infliction upon the well-behaved men, that the occasion demanded exceptional measures. The Commanding Officer thereupon issued an order that whenever a man was convicted of breaking bounds, the company to which he belonged should furnish the quarantine guard: this departure from the "duty roster" met with perfect success, and its legality was not afterwards called in question.

In each of the above cases the method of treatment was exceptional and suited to the peculiar circumstances, and each case is illustrative of a principle, the observance of which goes far towards checking the habitual commission of minor offences. In the former case, the employment of defaulters on extra duty for the prevention and detection of crime, with a view to sparing the well-behaved men, and at the same time making it to the direct interest of the defaulters to check further irregularities, is a principle which might well obtain a wider recognition than is possible under the present regulations. The Queen's Regulations allow of defaulters being "employed on all fatigue duties to the fullest possible extent with a view to relieving the well-behaved soldiers from these duties,"¹ but the widest stretch of the imagination could not class "night picquet" as a "fatigue," and though "the precise nature of the duties to be classed as 'fatigues' will be defined from time to time at each station, by an order to be issued with the approval of the Secretary of State for War, by the General or other Officer commanding,"² it is to be feared that sufficient latitude does not exist to meet the numerous cases which occur for the application of the principle advocated.

In the latter instance quoted, we have the company made immediately responsible for the good behaviour of the men composing it, and this appears to be a principle capable of the widest extension, and likely to be productive of the best results. Give a company or section a direct interest in the good behaviour of the men composing it, and a very powerful stimulus to co-operation for mutual comfort is at once established. It may be said that the same argument holds good for a regiment as for a section or company, but such is not the case, for if the extra duty falls upon a smaller unit, its incidence is more severely felt than if it is evenly distributed by roster throughout the whole regiment: besides which, in the latter case it is felt that it is the "same for all," and there is no call for the special exertion and individual effort which are brought into play in the case of the smaller unit: moreover, the men of a section or company are in a position to exercise a more direct influence over each other, and the immediate control of the non-commissioned officers is a more powerful factor than would be the case if the question were a regimental one.

"In European armies, discipline is principally maintained by granting to the Commanding Officers of every grade, and even to the *non-commissioned officers*, the power to inflict, within certain limits, summary punishment for all minor offences."³ In our Army, the

¹ General Order 185. 1887.

² "Queen's Regulations," s. viii, p. 34b.

³ Upton, p. 320.

power of inflicting punishment is vested almost entirely in the Commanding Officer: it thus happens that many comparatively trivial offences, which, however, call for prompt suppression, are brought before the Colonel, when they might equally well have been dealt with by the Captain, or even by a subaltern or non-commissioned officer: the result is that considerable lapse of time occurs before the delinquent is weighed off, and the Commanding Officer, reluctant to make an entry in the defaulter book without very good reason, "tears up the crime." Moreover, *promptness* in punishment is always more effective than severity, and it would seem highly desirable that junior Officers and non-commissioned officers, who are responsible for the discipline and smartness of even the smallest body of men, should have some little discretion in the matter of minor punishments; this would increase their authority, and at the same time bring home to them a truer appreciation of the responsible functions which they are called upon to exercise.

Marching Order.—The punishment of "marching order" appears to be a mistake; it is most undesirable to make any part of a man's military duty a punishment, unless it be for a careless performance of that particular duty, such as additional "sentry go" for irregularity on his post when sentry. This may appear to be at variance with what has already been advocated regarding picquets, &c., but it is not so, for in that case the duty is performed for a specific and useful object, the punishment lies in being told off for a duty from which well-behaved men are exempt. In the case of pack-drill, the punishment is of the treadmill type, and a military exercise is degraded into serving the purpose of a mechanical punishment. Fatigues and the drudgery of the barracks should take the place of pack-drill; nothing so surely rouses a spirit of sullen discontent as the performance of an absolutely useless punishment, from which no benefit can possibly accrue to anyone. For this very reason, however, the advocates of pack-drill, shot-drill, and the treadmill maintain that such punishments best serve to deter men from crime; this seems, nevertheless, to be an entirely illogical conclusion, for, in the first place, the punishment is of a routine nature, not calculated to strike terror into the heart of would-be evil-doers, and in the second place, the intense mental and physical weariness and moral disgust which are aroused in the breast of the defaulter leave him in a frame of mind which readily lends itself to the commission of further irregularities.

Preventive measures are, however, of infinitely more value than the most perfectly administered penal code, and inasmuch as idleness is the most prolific source of drunkenness and crime, it behoves Officers of all ranks to endeavour to provide rational employment for their men's leisure time; even duty can often be placed in an attractive light before the men, and if Officers are themselves zealous and interested in their duties, much may be done to draw closer the bond of union between themselves and their men both on and off duty, and thus facilitate such measures as may appear feasible under different circumstances for keeping the men "out of mischief."

Adjutants' Duties.—The "Adjutant's parade" is vicious in principle

and unsatisfactory in practice, it is a direct encouragement to young Officers to shirk their duties, and interposes a third person between the company Officers and their men, who has more to say to the discipline and training than anyone else in the regiment; moreover, it is most detrimental to the establishment of that regular intercourse between men and their Officers which should be so highly prized by all who love their profession. This is not as it should be, the duties of the Adjutant should be principally in the office, and the term of his appointment reduced to two years; undue influence on his part would then become impossible, and the junior Officers would all have a reasonable prospect of securing the appointment in their turn by showing zeal and ability in the drill and administration of their companies, and thereby qualifying themselves for a post which is in itself a most necessary training for the higher ranks of their profession.

This principle has already been recognized to a limited extent, the length of tenure of office for an Adjutant having been reduced from five years, with a possible extension of two, to a term of four years, which "under very exceptional circumstances may be extended for six months."¹

Statistics of Crime.—It is always a rash proceeding to place too much faith in statistics, and there are doubtless many cases in which the apparent absence of crime may be due in some measure to its "screened existence;" still, a comparison between the Returns of crime for the years 1883 and 1887 would appear to show that our efforts are tending in the right direction, and that the more lenient punishments which have obtained latterly have been productive of good results.

General FitzWygram's Return, showing percentage of crime in the following corps.	General courts- martial.		Other courts- martial.		Minor punish- ments.	
	1884.	1887.	1884.	1887.	1884.	1887.
Household Cavalry .....	..	..	2·3	1·1	49·0	49·7
Cavalry of the Line	0·02	..	6·8	4·3	86·0	80·6
Royal Artillery	0·016	0·03	7·7	6·7	104·0	92·0
Royal Engineers .....	..	..	3·7	2·3	85·0	57·5
Foot Guards .....	..	..	6·4	4·9	179·0	142·8
Infantry of the Line	0·06	0·03	7·6	6·5	168·6	139·4
Total average for all arms .	0·04	0·02	7·2	6·0	146·3	123·7

Defaulter Sheets.—It is not an uncommon case to find a man who has started badly in one station ready to turn over a new leaf in another; or perhaps upon transfer from a regiment at home to one abroad, a similar desire to start fresh may assert itself: every

¹ Pay Warrant, 1887, p. 52.

encouragement should naturally be afforded in such a case, and yet, do what we will, there is the defaulter sheet, that silent witness of past misdeeds, hanging like a mill-stone about his neck, with its terrible record of "previous conviction" confronting him at every turn. He may have succeeded in shaking off his old evil associations, and resolved to turn over a new leaf in his career, but the record of past misdeeds he can never shake off, and a new leaf in the defaulter book can only be turned over for the purpose of making fresh entries. It would be far better only to keep a three years' record of crime and to tear up the first sheet on the completion of four years' service, the second sheet after five, and so on in rotation, thus placing a man always within measurable distance of having "a clean sheet." Again, upon transfer from one corps to another, it would only be fair to let a man start entirely afresh; we do not exact characters when we enlist men, why then should there be any necessity for a character to accompany a man upon transfer? Such a system could hardly fail to exercise a salutary influence even upon the worst characters, and need not affect the present system of rewards for good conduct, inasmuch as a record of *good* service could always be kept throughout a man's career, and would bear witness to exceptional merit.

Crime on Service.

In war-time, the administration of military law is attended with many difficulties which have not to be reckoned with in time of peace. In the first place, it is of more urgent importance that discipline be maintained, and that the means taken to enforce it should be short, sharp, and decisive; in the second place, we are much restricted in our choice of measures by which to bring about the desired result. Success in war may be traced to many causes, and one of them is the maintenance of discipline by the judicious administration of military law, and a proper observance of "the customs of war."

The most conspicuous example of the results to be achieved by a judicious and impartial administration of military law, together with a strict observance of the customs of war, is furnished by the untarnished career of the Duke of Wellington; whether we consider the Peninsular Campaign, the Battle of Waterloo, or the Army of Occupation of 1815, we are fain to acknowledge that history has never recorded any more conspicuous instances of signal success in the maintenance of discipline, under circumstances of extreme difficulty. The most certain demoralization inevitably overtakes an army when its relations with the inhabitants in an enemy's country are not kept under control; the slightest laxity encourages license of every description, discipline is in abeyance, the troops become demoralized, and not infrequently the most fearful reprisals follow. In striking contrast to Wellington's Army of Occupation stands Napoleon's Grand Army of 650,000 men, collected for the invasion of Russia in 1812: of mixed nationality, governed by no uniform military code, and animated by motives of the most opposite character, 400,000 effective soldiers entered upon this great enterprise; never was there an

occasion for a stricter observance of the customs of war, and stringent administration of military law, and never was there an occasion upon which these necessary factors in the success of a great enterprise were more completely disregarded. "Authority was weakened by the commingled service of troops regulated by no common impulse; discipline became relaxed, insubordination produced all its disorganizing consequences; confusion and want prevailed; pillage destroyed the resources, for there were no magazines provided, and exasperated the peasantry, who were further infuriated by the wanton and outrageous desecration of their churches and sanctuaries. . . . The march through Prussia, a friendly country, had been a disastrous infliction upon the population; . . . devastation now became atrociously savage and terror general. The march from Smolensk had been accompanied with the most barbarous destruction and disorder of every kind. Even the towns which they were occupying were set on fire with recklessly mad ferocity and disregard of their own interests. Nothing was respected; a demon spirit raged and revelled with exterminating fury, preparing a day of vengeance no less savage and calamitous. All the towns, villages, and hamlets were abandoned as the columns appeared. . . . Moscow was deserted! . . . On the evening of the day of entering Moscow, September 14th, Murat bivouacked his troops outside the city to prevent pillage, but numbers of soldiers entered it after dark, and disorder and riot of every kind were indulged in. That night Moscow was in flames!"¹

On the 23rd October the memorable retreat from Moscow commenced. "And now, in their awful extremity, the wretched soldiers of Napoleon, maddened with their sufferings, had to reap the harvest of revenge they had sown, by outraging and ill-treating the population of the country. The Russian peasants—their homes destroyed, their churches desecrated, their lands waste and ruined, their beloved Moscow in ashes—turned with savage ferocity on those at whose hands they had thus suffered. The first excesses of Napoleon had been met with retaliation by the Russians; excess was repaid by excess, outrage by outrage, until every trace of civilization had vanished from the conduct of the combatants, and a demoniacal frenzy infuriated French and Russians alike."²

Never was retribution more awful and more complete; out of the mighty host which had crossed the Niemen on the 24th June, with 800 guns, only 400 infantry, and 600 cavalry with 9 guns, recrossed it on the 14th December. And yet throughout the long agony of that retreat not a voice was raised against Napoleon by the suffering wretches whom he had brought into this strait, so strong was the personal affection, amounting almost to adoration, which his soldiers felt for him.

Surely no contrast could be sharper or more instructive than this: Wellington, ever sceptical about personal attachment, relying only on

¹ Letter from General Sir Robert Wilson, British Commissioner with the Russian Army.

² Tovey, "Laws and Customs of War," p. 158.

discipline, and crowning the successes of the British arms in the field with unfading laurels; Napoleon, worshipped by his army, knowing well how to play on its passions, and to kindle enthusiasm to the point of frenzy, relying only on his splendid military genius and ignoring discipline, and bringing ruin and destruction, such as the world had never seen, on the armies of France.

An armed force in an enemy's country is an aggregation of human beings brought together for the avowed purpose of killing their foes; under such circumstances the fiercest passions are called into play, and the ordinary restraints of peace-time are insufficient to curb them. It is a time of high moral and physical pressure, the torrent of passion is set free, and it rests with the Commander to determine whether the terrible force at his disposal shall find its legitimate outlet in patriotic devotion and daring gallantry; or whether, bursting the bounds of discipline, it shall pour itself forth in rapine, murder, and destruction. The seeds of insubordination, cowardice, marauding, and desertion are latent in every army; let no leader flatter himself that human nature is any different now to what it was in the days of the Roman Empire; the surface may be more highly polished, but the staple is the same, and apparent differences are in degree, and not in kind; let him rather see to it that these seeds be not allowed to germinate, for then, indeed, he had need to be a Hercules to slay the hydra-headed monster, which but a short space back was in embryo, but which, while he yet hesitated to crush it, has all in a moment sprung into the full vigour of its fearful strength.

Flogging.—Flogging was abolished in the British Army by Act of Parliament in 1879-80 (44 & 45 Vict., c. 9, s. 6). In the Army Discipline and Regulation Act, 1879, corporal punishment on active service, to the extent of twenty-five lashes, was authorized, but in the Army Act of 1881 this paragraph is cancelled, and "the lash" disappears finally from our category of punishments. Flogging on active service was recognized as a ready means of inflicting "summary punishment," but it may be doubted whether it was really as efficacious as it was held to be, and history proves beyond doubt that the reduction of sentences of corporal punishment and its final abolition have gone hand in hand with a steady improvement in discipline. Many will still be found to maintain that the power to inflict the punishment was in itself sufficient to check crime, but they are confronted with the fact that since its abolition crime does not appear to have increased. Whether it is that its abolition has been instrumental in attracting a better class (morally) of men into the Army, who were hitherto deterred by the knowledge that such a punishment could be inflicted on them, or whether other causes have been at work to bring the result about, certain it is that discipline is maintained quite as easily without the lash as was ever the case when it was employed.

During the American rebellion "there was scarcely a regiment (American) in which corporal punishment in some form was not daily administered, and this arose from no desire to violate the law, but from a necessity to which many representatives in Congress can

testify. Even the expedient of the Field Officer's court-martial failed in its object, for when troops were on marches there was no time to take evidence and make out proceedings. When therefore stragglers and marauders returned to their regiments, the Colonels adopted the sure and expeditious process of pronouncing a punishment which, being brief in its character, allowed the offender to be restored speedily to duty,"¹ a strong argument, apparently, in favour of flogging; but did the punishment effect its object, viz., the re-establishment of discipline and the *prevention* of further crime? Evidently not, for the punishment was *daily* inflicted! Would not the punishment of death, inflicted in the first case of desertion, marauding, or insubordination, have served as an example which would have obviated the necessity for flogging, by deterring would-be evil-doers in the future from incurring a like penalty?

The example of the celebrated Roman General Corbulo, in the campaign against the Parthians, during the severe winter already alluded to, is deserving of study. We are told that "the hardships were such that the Army suffered from desertion. . . . The practice of lenity towards the first or second offence, which often prevailed in other Armies, would have been attended by dangerous consequences. He who quitted the colours suffered death as soon as taken; and this severity proved more salutary than weak compassion."²

The attempt at a compromise for the abolition of flogging in our Service by the introduction of "field imprisonment, No. 1 and No. 2," is a halting admission that summary punishment is necessary on service; and yet it is far from meeting the requirements of the case; "such summary punishment shall be of the character of personal restraint or hard labour;"³ possibly it may be a useful addition to our category of punishments, though it by no means goes to the root of the difficulty.

Discharge with Ignominy.—Previous to the abolition of flogging, there seems to have been an invincible prejudice against the punishment of "discharge with ignominy," principally on the grounds that a "Queen's bad bargain" could, by gross and continued misconduct, obtain what he most desired, viz., his discharge. But this argument does not go beneath the surface; the object of punishment is not to wreak vengeance on the evil-doer, it is to improve discipline; and though it may readily be conceded that "discharge with ignominy" is no punishment at all to a notoriously ill-conducted soldier, it nevertheless rids the Army of a man whose services under no circumstances are likely to be of the slightest advantage to his regiment, and whose daily example and influence will certainly do more to spread disaffection, insubordination, and crime among his comrades than the most severe punishments could be efficacious in counter-acting; in fact, a man who takes a flogging well was not infrequently exalted into a kind of hero among a certain class of men, and Officers of experience will be found to assert that the example of such an one

¹ Upton, p. 359.

² Tacitus, Book XIII, sec. xxxv.

³ Army Act, 1881. 3, 44 (5).

is actually infectious. It seems therefore advisable that on active service crime of the nature indicated should be punished according to its degree, either by *death*, or *discharge with ignominy*, the latter being preceded when possible by a sentence of imprisonment; in either case the pernicious influence of the criminal is removed.

Death.—It is best to face the question boldly, and putting aside all sickly sentimentality, acknowledge that for *serious* offences of the nature indicated, there is but one punishment, and that is—"death." When the slightest tendency to this class of crime evinces itself on service, the lesson must be short and sharp, and administered with no uncertain hand. It goes without saying in these days, when every conscientious act for the good of the country can be metamorphosed into a crime for party purposes, that the General who sanctions the extreme penalty of the law may be subsequently arraigned for murder. Be it so; he has not shrunk from facing the enemy in the field, let him not shrink from the angry clamour of interested politicians at home.

The following statistics bearing on this subject are of special interest, inasmuch as they refer to the years when flogging was permitted, cancelled, and superseded by field imprisonment, the Army being engaged in active operations in Afghanistan and at the Cape of Good Hope during the greater part of the entire period:—

	1878.	1879.	1880.	1881.
Death .....	..	..	..	..
Corporal punishment	29	545	25	14
Corporal punishment with imprisonment....	4	50	13	1
Field imprisonment (summary punishment under sec. 44 (part 5), A.A. 1881) .....	..	..	..	3
Discharge with ignominy .....	..	..	..	42

For the ten years previous to 1878 there were eleven punishments by death.¹

Flogging was abolished in peace-time in 1868; its *total* abolition was negatived in the House of Commons by—

120 votes to 60 in 1876,
164 " 122 " 1877,
239 " 56 " 1879.²

Minor Offences on Service.—With reference to minor irregularities on service, it is particularly desirable that Commanding Officers should avoid "creating crime," *i.e.*, framing petty orders of a harassing description, and enforcing trivial regulations with a stringency which should only be applied to matters of intrinsic importance. When an

¹ General Annual Return of the British Army, 1880-81.

² Haydn's "Dictionary of Dates."

order has been issued by superior authority, however unreasonable or faulty it may appear, it is the duty of all Officers to loyally carry it out; there must be no questioning or grumbling. Let every Officer in such a case remember that he is doing something more than carrying out an order of which he disapproves, he is setting an example of discipline! Hesitation in obeying orders, or an ill grace in carrying them out on the part of an Officer, will sow the seeds of indiscipline among the men, seeds which, under the influence of hardship and danger, will bring forth their fruit all too soon, and spread with frightful rapidity through an army.

Officers who make a point of participating as much as possible in the trials which their men have to undergo obtain an influence over them which they often do not realize. The British soldier loves fair-play, and when it is once brought home to him that the Officer who shares his hardships and his glories, participates also in the shame of his misconduct and feels acutely that it is one of *his* men who has gone wrong, he argues that "getting into trouble" is a piece of base ingratitude to the Officer from whom he has received nothing but kindness and encouragement, and upon whom he has learned to look with something of the feeling of a comrade. It is not unusual for a soldier to put restraint upon his passions and inclinations, not from *self-respect*, but from the respect and affection which he bears to his Officer.

Rewards.—The question of rewards should go hand in hand with that of punishments: much has been done to put a premium on good conduct, both in peace and war; but in the latter case it is of the utmost importance that rewards for conspicuous merit should be as *summary* as the punishments for conspicuous breaches of discipline. A reward, like a punishment, loses half its value if we are dilatory in administering it. "It is to be hoped," says Lord Wolseley, "that in our next campaign the General Officer Commanding may have the power to confer the ribbon of the Victoria Cross on the spot, subject to Her Majesty's approval afterwards. . . . A reward conferred on the spot is doubly efficacious; it is more highly prized by the recipient, and has a greater influence upon others to go and do likewise."¹

It is a favourite saying with some persons, when an act of conspicuous gallantry has been performed in the field, that the man who has so distinguished himself "did nothing more than his duty," and that no special reward should be given to anyone for doing that which it was his duty to do. Such reasoning implies an absence of insight into human nature; it is human nature to wish to be appreciated, and to receive visible tokens of that appreciation.

Moreover, we are careful to award the appropriate punishment for the smallest breach of discipline, why, then, should not equal attention be bestowed on the distribution of appropriate honours and rewards for the courageous performance of duty under exceptional circumstances? Why not legislate for discipline in the observance as well as in the breach? No duty can be more distasteful than that of

¹ Wolseley's "Pocket-book," p. 6.

bringing a delinquent to justice, and awarding punishment for crime; and surely no duty can be more agreeable than that of bringing to light every instance of meritorious conduct and obtaining for it the appropriate reward. The men are made of the same flesh and blood as their Officers, they, too, have aspirations and ambitions, and we should endeavour by every means at our disposal to encourage those aspirations and foster that ambition by the judicious and *timely* bestowal of honours and rewards, thus introducing into our Army a spirit of reverence and affection for its glorious traditions, which will do more to safeguard its honour than the most impartial administration can ever effect by the use of repressive measures for the punishment of crime.

Summary.

An attempt has been made to indicate the lines upon which successful endeavours to improve the discipline of our Army may be expected to travel, and considerable stress has been laid upon the importance (I) of cultivating a high moral and intellectual standard, (II) of training our Army in such a manner in peace-time as may ensure the acquirement of habits calculated to form correct instincts for war.

I. It has been already stated that much prejudice formerly existed in the minds of the lower middle class against the Army, and that this prejudice is slowly dying out; it has been, however, and still is, a factor of the first importance in preventing a flow of desirable recruits into the ranks. In districts where the Army is well known this prejudice is not found to exist to the same extent as it does elsewhere, and this is borne out to a certain extent by the comparative ease with which the Royal Marines obtain a first-rate class of recruits from Hampshire, Dorsetshire, Devonshire, and Cornwall, while other branches of the Service in attempting to tap the Midlands find themselves obliged to put up with what they can get. A closer intimacy between the Army and the civil population of the country could not fail to be productive of the best results, and instead of having to be content with "corner lads" we should be able to *select* our recruits for moral and intellectual, as well as for physical fitness. It is well known that the only corps (exclusive of Marines) which is able thus to select their men is the Household Cavalry; no "recruiting" is required to fill up its ranks, and aspirants to the honour of serving in it have to get their applications backed up with certificates of character and general fitness, such as would astonish men in other branches of the Service; moreover, the Officers make a point of bringing up promising young men of good position from the country places with which they are themselves associated; the result of this system makes itself evident in the Annual Return of Courts-martial and Minor Punishments, known as "General FitzWygram's Return," and the following abstract for the years 1884 and 1887 will be found instructive:—

	Per cent. of average number of troops.			
	Courts-martial other than General C.-M.		Minor punishments.	
	1884.	1887.	1884.	1887.
Cavalry of line, Artillery, Foot } Guards, and Infantry of line.. }	7·1	5·6	134·4	116·5
Household Cavalry.....	2·3	1·1	49·0	49·7
Foot Guards	6·4	4·9	179·0	142·8 _A

The average for the two years shows that the Household Cavalry had one-fourth the number of courts-martial and two-fifths the number of minor punishments recorded by the other branches of the Service; there were no general courts-martial, and what is specially significant is the fact that the Foot Guards, surrounded by much the same conditions of life as the Household Cavalry, have practically the same average of crime as the rest of the Army. There can be no clearer proof that the social standing and moral character of recruits previous to enlistment exercises a most direct influence on the discipline of the corps to which they are posted.

The pay of our soldiers, and especially of our non-commissioned officers, has advanced substantially of late years, until it has reached a point which offers a very fair and honourable livelihood to a man of ability and good character, and bears comparison with the rates which obtain in the open labour market; rewards for good conduct or gallantry in the field are more numerous and substantial than have ever been offered before; punishments are lighter, and Officers are more willing to interest themselves in the welfare of their men; in fine, the conditions of service are infinitely more attractive now in every particular than they were twenty years ago, and yet there is practically no indication that the Army is able to tap a higher stratum of society than of yore. The creation of a reserve appears to be largely responsible for this state of things, and has a threefold bearing on the question:—

1. Reserve service makes the Army unpopular, inasmuch as employers of labour are shy of engaging men whose services they may be deprived of at a critical moment, and the very fact of a man possessing high qualifications actually renders it more difficult for him to obtain employment as a reservist, since for that very reason he is more difficult to replace at a moment's notice than a mere labourer would be.

2. However anxious a man may be to make the Army his profession and earn a pension, he cannot be *certain* that he will be permitted to re-engage; consequently, if he has ability and character, he casts about for a surer means of earning his living.

3. The perpetual drain caused by men passing into the reserve after a tour of short service necessitates the yearly enlistment of a far greater number of recruits than was the case under long service conditions; under these circumstances we may fairly congratulate ourselves that the Army has not actually deteriorated, and see in this fact evidence that the improved conditions of service have not been without a tangible result.

It may be questioned whether the establishment of a reserve at such a cost as this is worth the sacrifices which have to be made for it; and though there are many excellent features in the short service system, it appears that a modified system which would permit of men enlisting for long or short service, according to their own pleasure, *provided that they could prove themselves to be desirable candidates*, would be productive of such results to the *efficiency* of the Army that the consequent loss in *numbers* to the reserve could be faced with equanimity.

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II. *Mobilization*.—India is our great training ground, Aldershot and the Curragh our small training grounds; beyond these is "outer darkness." The country is rocked in a cradle of fancied security by the vaunted possession of two army corps. It would be eminently instructive if the Secretary of State for War would present a balance-sheet to Parliament every year, showing in actual figures the number of Officers and men, horses, guns, and carriages required for the war establishment of two army corps on one side; and on the other side the numbers which we can actually muster together, with the balance debit, showing the numbers required to complete.

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And now with regard to the mobilization of our two army corps, complete in every detail on a war footing:—The training effected by such an operation, in every grade and every department of the Army, would be worth volumes of carefully compiled statistics or alternately alarmist and reassuring essays in our journals and magazines: the experience gained in every branch of military duty would be simply invaluable. Why is it not done? Is it on account of the expense? Or is it because we know it would be a complete fiasco? The Admiralty have lately had the courage to put the efficiency of the Navy to a practical test, though even this was not done without having recourse to many expedients which would certainly be impracticable in time of war. Let us never forget the terrible disasters of the French in 1870-71 were entirely due to a false estimate of their strength, the military machine was not in working order, figures and statistics had been employed to conceal the true state of affairs, and the country, deceived as to its resources, clamoured for a war which was to be its ruin. The extent of our annual manœuvres is not sufficient to embrace more than a fraction of our Army or to test the efficiency of its various departments. We hear a good deal about the "chain of responsibility," this in our Service seems to be interpreted into the passing on of orders, reports, &c., "through the proper channel;" what we really require is the proper allocation and distribution of responsibility, and the confidence in its exercise which can only result from practice. Not only should conspicuous merit be recognized, but

incapacity in *every rank* should meet with its deserts. The story told by a spectator at the German manœuvres of a cavalry regiment charging through a line of guns under the most impossible conditions is suggestive of the practice that obtains in the German Army. "That regiment will be lost," said a bystander: "The Colonel will," significantly remarked a Staff Officer, in reply. It is a doubly mistaken kindness to show undue leniency to incapable Officers, not only is it detrimental to the troops under his command, but it is discouraging to other Officers who might be creditably filling the same post. But in imposing penalties on inefficiency, it must never be forgotten that training and experience are necessary to secure efficiency, and that an Officer should not find himself thrown out in the race because he displays a certain degree of incapacity to deal with circumstances of which he can have had no previous experience, but only because he has shown himself incapable under all circumstances of profiting by the experience which he has had ample opportunities of acquiring.

Subaltern Officers.—Some allusion has been made to the part which junior Officers have to play in promoting and maintaining discipline, and the importance of instilling sound notions on this subject into cadets, so that when they obtain their commissions, even if much good has not been done, at any rate there will be little evil to undo. Subaltern Officers may be divided roughly into two classes:—

1. Those who hug a sense of irresponsibility, and look upon every military duty as a disagreeable accident, inseparable perhaps from the nature of their profession, but none the less irksome.

2. Those to whom success in whatever they undertake is the guiding star of existence; thoroughness characterizes everything they do, and a desire to excel seems to pervade the very air they breathe; ambition is with them a living force, and responsibility is eagerly invited and warmly welcomed in whatever shape it may come. Such Officers form the very backbone of an army; they respect orders and carry them out in the spirit as well as in the letter, they work hard to secure efficiency within the circle of their influence, they set an example to the non-commissioned officers which the latter are not slow to follow, they infuse a spirit of reality into the routine duties of every day, and communicate some portion of their own personality to all who come in contact with them.

Commanding Officers may do much to encourage the latter category and reduce the numbers of the former; it is, however, to be feared that in many regiments the excellent provisions contained in paras. 8, 9, 10, Sec. 7, of the Queen's Regulations, are practically a dead letter; there are too many Officers in command of regiments who prefer to win a little cheap popularity by being extremely easygoing to gaining the more solid advantages which would accrue to their corps by consistent and conscientious efforts to train their subalterns in accordance with the spirit of the Regulations.

Finally, it is not by sweeping changes in administration or radical reforms in drill that we can expect to bring the cultivation of discipline to perfection, but rather by inspiring all ranks in the Army with a spirit of zeal and love for the noblest of all professions. Let the

State set the example by taking a warm interest in the Army and showing a fixed determination to secure its efficiency in every detail; let us hear no more of rotten clothing and indifferent weapons, and drafts sent on service who have never fired a shot; let the money due to a soldier's next-of-kin be paid over to them instead of being published in "the Official Gazette;" let every Officer and man be made to feel that his countrymen are doing all in their power to put him on the most advantageous footing possible as regards pay, clothing, equipment, and administration, to welcome him when he returns from distant stations or from hard-fought campaigns, and to help and protect those who are dependent on him with a willing hand and loving heart should his life be sacrificed in the service of his country. Then, duty will cease to be thankless, the glorious profession of arms will cease to be degraded by the admission of ne'er-do-weels into its ranks, and every Officer and man will feel that England not only "expects every man to do his duty," but is ready and willing to *do her duty too*.

APPENDIX. SCHEDULE A.
Table of Rates of Pay under various Royal Warrants.

Royal Warrant, 1848. Ranks.	Cavalry of the line.	Infantry.	Other payments.	Stoppage.	Remarks.	Rewards.	Pensions. maximum.
Sergeant-major, regimental	2 6	3 0			Under this Warrant, only this rank was issued free, and boots were issued free, and the item for cloth- ing and necessaries charged to the soldier was extremely high compared with the same item at the present day. The voyage round the world was made at the expense of the soldier. Cape Horn was held while performed to the shorter route, as it enabled men to save a little money to pur- chase the necessary kit, instead of starting in debt.	2,000l. was annually granted under this Warrant for annuities for distinguished or meritorious conduct to sergeants and corporals, who served amongst these recom- mended each year.	4 6 3 0 2 0
Troop sergeant-major	2 0	...		The stop- page for these ranks (single) would be— rations, 44d.; ext. messing, 44d.; and daily, 14d.			...
Quartermaster-sergeant .....	...	2 6					2 3
Colour-sergeant .....	...	2 4					2 0
Paymaster-sergeant	2 2	1 10					2 0
Ditto, after seven years	2 8	2 4					...
Regimental orderly-room clerk ..	2 2	1 10	Beer-money, 1d. per day all ranks.				2 0
Ditto, after seven years	2 8	2 4					...
Armourer-sergeant	2 2	1 10					...
Saddler-sergeant	2 2	1 10					...
Hospital-sergeant	2 2	1 10					...
Ditto, after ten years	2 8	2 4					...
Trumpet- or drum-major	2 2	1 10					...
Sergeant	2 2	1 10					...
Corporal	1 7 1	1 4	G.C. pay after 5, 10, 15, 20, 25, and 30 yrs., from 1d. to 6d., per diem.				2 0
Private	1 3	1 0					2 0
Boys up to fifteen years of age ..	0 10	0 10					...
Trumpeter or drummer	1 7	1 1 1 1					1 1

Under Royal Warrant,
April 1854, a limited
sum was allowed annually for
gratuities for long service
and good conduct; this sum
averaged about 20l. per an-
num, the gratuity for ser-
geant being 15l., for corporals
10l., and for drum-majors
12l. amongst these recom-
mended each year.

By Royal Warrant, Jan-
1860, the long service medal,
without gratuity, was granted
to a further number thus:—
Each 1000 R.A. 1s. 3.
Each 1000 R.F. 1s. 3.
Each regt., inf. or cav., 3s.

APPENDIX. SCHEDULE B.
Table of the Rates of Pay of all Ranks of the Cavalry during various Years.

Rank.	1861-62.	1867-68.	1876-77.	1881-82.	1887-88.	Rate of Pensions, 1888.
Regimental sergeant-major ¹	s. d. 3 8	s. d. 3 8	s. d. 3 7	s. d. .. 4	s. d. .. 4	After qualifying service— 2s. 9d., with increase up to 9d.
Quartermaster-sergeant	3 2	3 2	3 1	3 10	3 10	do.
Colour-sergeant and troop sergeant-major	3 2	3 2	3 1	3 10	3 10	do.
Paymaster-sergeant	2 4	2 4	2 3	2 8 ³	2 8	do.
Regimental orderly-room clerk	2 4	2 4	2 3	2 8	2 8	do.
Armourer-sergeant	2 4	2 4	4 11	..	5 6	do.
Saddler sergeant .....	..	3 4	3 3	..	..	do.
Army Hospital Corps sergeant	2 4	2 4	..	..	..	do.
Sergeant	2 4	2 4	2 3	2 8	2 8	do.
Corporal	1 7½	1 7½	1 6½	2 0	2 0	1s. 8d., with increase up to 5d.
Private	1 3	1 3	1 2	1 2	1 2	do.
Boys under 18 years .....	..	..	..	0 8	0 8	do.
Trumpeter or drummer	1 5	1 5	1 4	1 4	1 4	do.
Sergeant-major ¹ (<i>Warrant Officer</i>) .....	..	..	..	5 4	5 4	From 3s. 0d. to 4s. 6d., with pension for widow and children after service for five years as a Warrant Officer.
Lance-sergeant .....	..	..	..	2 4	2 4	
Lance-corporal .....	..	..	..	1 7	1 7	

¹ Obtained warrant rank in 1881; may retire after completing 21 years' service, and are compulsorily retired after attaining ages varying from 45 to 60, according to branch of Service. Not eligible for "long service" or "meritorious conduct" medals. Deferred pay ceases on promotion to warrant rank.

² 2s. 8d. to 4s. 2d.

APPENDIX. SCHEDULE B.

Table of the Rates of Pay of all Ranks of the Royal Artillery, during various Years.

Rank.	1861-62.	1867-68.	1876-77.	1881-82.	1887-88.	Rate of Pensions, 1888.
Regimental sergeant-major ¹	s. d. 4 3½	s. d. 4 3½	s. d. 4 2	s. d. .. 2	s. d. .. 2	After qualifying service— 2s. 9d., with increase up to 9d.
Quartermaster-sergeant	3 9½	3 9½	3 8	4 2	4 2	do.
Colour-sergeant and troop sergeant-major.....	3 4	3 4	3 3	3 9	3 9	do.
Paymaster-sergeant	2 10	2 10	2 9	2 8½	2 8	2s. 9d.
Regimental orderly-room clerk.....	2 10	2 10	2 9	2 8½	2 8	do.
Armourer-sergeant.....	2 10	2 10	2 9	..	5/6 and 6/	do.
Army Hospital Corps sergeant	2 10	2 10	..	..	..	..
Sergeant.....	2 10	2 10	2 9	3 2	3 2	2s. 3d.
Corporal.....	2 2	2 2	2 1	2 6½	2 6	1s. 8d., with increase up to 5d.
Private	1 3½	1 3½	1 2½	1 2	1 2½	1s. 1d.
Boys under 18 years.....	..	..	..	0 8	0 8	do.
Trumpeter or drummer	1 3½	1 3½	1 2½	1 2½	1 2½	1s. 1d.
Sergeant-major ¹ (<i>Warrant Officer</i>) .....	..	..	..	5 10	5 10	As for cavalry.
Bombardier .....	..	..	..	2 3	2 3	..
Acting bombardier .....	..	..	..	1 11	1 11	..

¹ Obtained warrant rank in 1881: may retire after completing 21 years' service, and are compulsorily retired after attaining ages varying from 45 to 60, according to branch of Service. Not eligible for "long service" or "meritorious conduct" medals. Deferred pay ceases on promotion to warrant rank.

² 2s. 8d. to 4s. 2d.

APPENDIX. SCHEDULE B.
Table of the Rates of Pay of all Ranks of the Infantry during various Years.

Rank.	1861-62.		1867-68.		1876-77.		1881-82.		1887-88.		Rate of Pensions, 1888.
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	
Regimental sergeant-major ¹	3	2	3	4	3	3	4	0	4	0	After qualifying service—
Quartermaster-sergeant.....	2	8	2	8	2	7	4	0	3	0	2s. 9d., with increase up to 9d.
Colour-sergeant and troop sergeant-major.....	2	6	2	6	2	5	3	0	3	0	2s. 6d. do.
Paymaster-sergeant.....	2	0	2	0	1	11	2	8	2	8	2s. 9d. do.
Regimental orderly-room clerk.....	2	0	2	0	1	11	2	8	2	8	2s. 9d. do.
Armourer-sergeant.....	2	2	2	5	0	4	5	6	6	0	2s. 9d. do.
Army Hospital Corps sergeant.....	2	2	2	2	2	2	2	4	2	4	2s. 3d. do.
Sergeant.....	2	0	2	0	1	11	2	4	2	4	1s. 8d., with increase up to 5d.
Corporal.....	1	4	1	4	1	3	1	8	1	8	1s. 1d. do.
Private.....	1	0	1	0	1	0	1	0	1	0	1s. 1d. do.
Boys under 18 years.....	1	1	1	1	1	1	1	1	1	1	1s. 1d. do.
Trumpeter or drummer.....	1	1	1	1	1	1	1	1	1	1	As for cavalry.
Sergeant-major ¹ (Warrant Officer).....	1	1	1	1	1	1	1	1	1	1	As for cavalry.
Lance-sergeant.....	1	1	1	1	1	1	1	1	1	1	As for cavalry.
Lance-corporal.....	1	1	1	1	1	1	1	1	1	1	As for cavalry.

¹ Obtained warrant rank in 1881; may retire after completing 21 years' service, and are compulsorily retired after attaining ages varying from 45 to 60, according to branch of Service. Not eligible for "long service" or "meritorious conduct" medals. Deferred pay ceases on promotion to warrant rank.

Up to 30th September, 1873, the stoppage for rations and washing was the same as per Schedule A. From 1st October, 1873, rations were issued free, under Royal Warrant, 26th September, 1873, and the rates of pay were as stated above for the years 1876-77.

Anninities.—Sums not exceeding 4,150*l.* for cavalry and infantry, 635*l.* for Royal Artillery, and 90*l.* for Royal Engineers, and proportionate amounts for the various departmental corps, are yearly granted to soldiers above the rank of corporal (not Warrant Officers) in sums not exceeding 20*l.*, to be held with pension. Prizes for skill at arms given annually to all branches.

APPENDIX. SCHEDULE C 1.
Daily Rates of Pay of the Corps named (1888).

Rank.	House- hold Cavalry.	Foot Guards.	Cavalry.	Infantry.	Royal Artillery.		Royal Engineers.		Present rate of Pension.
					Horse Brigade.	"Field," Garrison, and Coast.	Royal En- gineers and Tele- graph com- panies.	Pontoon troop, field park, and mounted com- panies.	
Quartermaster-corporal-major.....	s. d. 4 6	s. d. 4 0	s. d. 4 2	s. d. 4 0	s. d. ..	s. d. 4 2	s. d. 4 6	s. d. 5 3	s. d. 2 9 ¹
Quartermaster-sergeant.....	..	..	..	..	..	..	..	..	2 9
Farrier-sergeant.....	4 3	..	4 0	..	4 5	4 3	..	4 6	2 9
Troop or battery corporal-major.....	4 0	..	3 10	..	4 4	4 2	3 9	4 4	2 6
Troop or battery rough rider.....	4 0	..	3 10	..	..	..	3 9	4 0	2 6
Colour-sergeant.....	..	3 2	..	3 0	..	..	..	..	2 6
Corporal-instructor of fencing, gymnastics.....	3 3	..	3 3	..	gunnery-sergeant. 4 2	..	..	..	2 6
Sergeant-instructor of musketry.....	..	3 3	..	3 3	..	..	..	..	2 6
Corporal of horse.....	3 0	..	..	..	..	..	..	..	2 3
Sergeant.....	..	2 6	2 8	2 4	3 4	3 2	3 3	3 6	2 3
Corporal trumpeter (or sergeant).....	3 2	..	2 8	..	3 4	..	..	..	2 3
Sergeant drummer.....	..	2 6	..	2 4	..	3 3	sergeant bugler 4 6	..	2 3

¹ Pensions of those above the rank of corporal may be increased by service up to 9d.

Rank.	House- hold Cavalry.	Foot Guards.	Cavalry.	Infantry.	Royal Artillery.		Royal Engineers.		Present rate of Pension.
					Horse Brigade.	"Field," Garrison, and Coast.	Royal En- gineers and Tele- graph Battn.	Pontoon troop, field park, and mounted com- panies.	
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Corporal saddler (or sergeant)	4 0	..	3 8	..	3 9	3 7	..	..	2 3
Corporal farrier (or sergeant)	3 4	..	2 4	..	..	..	..	..	2 3
Corporal if paid as lance-sergeant .....	..	2 2	2 4	2 0	..	..	..	..	1 8 ¹
Corporal	2 8	1 9	2 0	1 8	2 8	2 6	2 6	2 6	1 8
Private if paid as lance-corporal .....	..	1 4	1 7	1 3	..	..	1 10	2 1	1 1
Kettle-drummer	2 4	..	1 9	..	..	..	..	..	1 1
Suttlér	2 4½	..	1 9½	..	..	..	..	..	1 1
Shoing smith	2 3	..	1 8	..	2 2	2 0	..	..	1 1
Trumpeter or drummer	1 11	1 2	1 4	1 1	2 0	1 2½	1 1½	1 4	1 8 trumpeter drummer
Private (or gunner)	1 9	1 1	1 2	1 0	1 4	1 2½	1 1½	1 4	1 1
Boys up to 15 years of age	0 8	0 8	0 8	0 8	0 8	0 8	0 8	0 8	..
Master gunner, 3rd class .....	..	..	..	..	..	4 6	..	..	2 9
Collar-maker quartermaster-sergeant .....	..	..	..	..	3 11	3 9	..	..	2 9
Wheeler quartermaster-sergeant .....	..	..	..	..	3 11	3 9	..	..	2 9
Band-sergeant .....	..	..	..	..	..	2 9	..	..	2 3
1st corporal of the band .....	..	..	..	..	..	2 9	..	..	1 8
Bombardier .....	..	..	..	..	2 5	2 3	..	..	1 8
Musician .....	..	..	..	..	..	1 5	..	..	1 8
Driver .....	..	..	..	..	1 3	1 2½	..	..	1 1

¹ Corporal, and below that rank, up to 5d, for further service after twenty-one years.

APPENDIX. SCHEDULE C 2.
Daily Rates of Pay of the Corps named (1888).

	Staff Clerks.		Present rate of Pension.
	s.	d.	
Sergeant staff clerk on appointment.....	3	6	2 3
After three years, colour-sergeant.....	4	0	2 6
After three years in receipt of 4s., quartermaster staff clerk.....	4	6	} 2 9
After three years in receipt of 4s. 6d.....	5	0	
	Household Cavalry.		
	s.	d.	
Paymaster-sergeant and orderly-room clerk.....	3	0	} 2 9
Staff-sergeant.....	3	6	
Ditto if colour-sergeant or after three years in receipt of 3s.....	3	6	
Ditto, if a quartermaster-sergeant, or three years in receipt of lower rate.....	4	0	
After three years in receipt of next lower rate.....	4	6	
	Foot Guards.		
	s.	d.	
Paymaster-sergeant and orderly-room clerk.....	3	0	} 2 9
Staff-sergeant.....	3	6	
Ditto if colour-sergeant or after three years in receipt of 3s.....	3	0	
Ditto, if a quartermaster-sergeant, or three years in receipt of lower rate.....	4	0	
After three years in receipt of next lower rate.....	4	6	
	Cavalry.		
	s.	d.	
Paymaster-sergeant and orderly-room clerk.....	3	0	} 2 9
Staff-sergeant.....	3	6	
Ditto if colour-sergeant or after three years in receipt of 3s.....	3	0	
Ditto, if a quartermaster-sergeant, or three years in receipt of lower rate.....	4	0	
After three years in receipt of next lower rate.....	4	6	
	Infantry.		
	s.	d.	
Paymaster-sergeant and orderly-room clerk.....	3	0	} 2 9
Staff-sergeant.....	3	6	
Ditto if colour-sergeant or after three years in receipt of 3s.....	3	0	
Ditto, if a quartermaster-sergeant, or three years in receipt of lower rate.....	4	0	
After three years in receipt of next lower rate.....	4	6	
	Royal Artillery.		
	s.	d.	
Paymaster-sergeant and orderly-room clerk.....	3	0	} 2 9
Staff-sergeant.....	3	6	
Ditto if colour-sergeant or after three years in receipt of 3s.....	3	0	
Ditto, if a quartermaster-sergeant, or three years in receipt of lower rate.....	4	0	
After three years in receipt of next lower rate.....	4	6	
	Medical Staff Corps.		
	s.	d.	
Staff-sergeant, 1st class.....	4	0	} 2 9
Staff-sergeant, 2nd class.....	4	3	
Sergeant, 2nd class.....	2	8	
Corporal if paid as lance-sergeant.....	2	4	
Corporal.....	2	1	} 2 9
Private if paid as lance-corporal.....	1	6	
Bugler.....	1	2	
Private.....	1	2	
Boy.....	0	8	} 2 9
3rd class staff-sergeant.....	3	9	
2nd corporal.....	4	3	
1st corporal.....	4	6	

Deferred pay at 3l. per annum is given in addition to these rates of pay, to privates and corporals for 12 years, and to sergeants to completion of 21 years. This has been granted since April, 1876. Stoppages and rewards as per Schedule B.

ESSAY.

DISCIPLINE: ITS IMPORTANCE TO AN ARMED FORCE, AND THE BEST MEANS OF MAINTAINING AND PRO- MOTING IT.

By Captain A. M. MURRAY, R.A.

"Force is no remedy."

PART I.—*Introductory.*

"I am more and more convinced from the experience of this, as well as from the last campaign, that our want of success is entirely due to the want of discipline in the army."—MARLBOROUGH.

THE first part of the title of this essay would seem to be the statement of an axiom rather than the theme for argumentative discussion. It needs, indeed, no argument to demonstrate what history conclusively proves, that military discipline and success in war go hand in hand together. There may be differences of opinion as to how the discipline of an army should be maintained; there can be no difference as to the importance of maintaining it in as high degree as possible. Whether we judge from the utterances of successful Commanders, or from the results of their campaigns, we may affirm it to be a matter of fact, established beyond all risk of contradiction, that discipline is the first and most necessary condition of success for an armed force which seeks to fight its way to victory.

The student of military history will find during the course of his reading numerous examples of the truth of this assertion. There is in the first place the great and striking example of the English Army, the records of which—especially during the past century—will be made the subject of constant reference for the purpose of this inquiry. It will be well, however, in the interests of exhaustive discussion to go further abroad than England, and even to look for examples in classical as well as modern times, so as to ascertain whether military discipline is founded upon ancient and ever-existing principles of war, or is merely the outcome of the changed conditions of modern fighting. With this object in view it will be convenient, without accumulating instances, to select one example from ancient

and one from modern history, and, with the help of such evidence as may be forthcoming, examine the conditions under which each example offers itself for instruction. Such examination will be useful, not only by way of preface to the matter under discussion, but also as affording means for ready reference when the second and more practical part of this essay comes to be considered.

In ancient times, the Persian invasion of Greece is a conspicuous and ever-instructive example of the value of discipline in war. The overthrow of Xerxes and his vast host shows what the presence of discipline can do when unattended by science, or preparation, or numerical superiority, or, indeed, by any of those conditions (except the one mentioned) which are generally supposed to contribute to belligerent power. The Greek armies were badly equipped,¹ and badly led. Hardly any preparation had been made to oppose an invasion, which, after the battle of Marathon, was known to be inevitable,² but which was awaited both in Athens and in Sparta with an apathetic calmness inexcusable even in the face of conscious strength.³ The commanders appointed to lead the armies did not understand the most elementary principles of scientific strategy. Nor did they make up by energy for want of military wisdom: they would not even take steps to ascertain the necessary topographical features of their own selected battle-fields.⁴ At Thermopylæ, at Salamis, and at Platæa, they allowed themselves to be out-generalled in such a way as actually to court defeat. Combination of action, moreover, was paralyzed by want of political union no less than by divided military counsels. The Persians, on the contrary, brought to the encounter all the resources of a rich country, and all the experience acquired by long practice in war. They were led by a man who, though a coward at heart, and with other great faults of character, was until his defeat regarded, and not without reason, as the first soldier of the day. He had laboured for seven years to organize the army of invasion, and had elaborated his plans with extraordinary pains. Considering the difficulties which must have existed in those days in the way of transport and supplies, it cannot be denied that both the plan of the invasion and the manner of its execution afford an exceedingly high testimony to the military capacity of Xerxes.⁵ Yet in spite of advantages of numbers, skill, organized plan, undivided command, and superior military knowledge, when it came to actual

¹ Except only in arms.

² Herodotus, VII, 239.

³ The Athenians were celebrating the Olympic, and the Spartans the Carnean festivals (Herodotus, VII, 206), at the very time when Xerxes had reached the Greek outposts.

⁴ Grote: "History of Greece." Part II, chap. xl.

⁵ It is not necessary to accept Herodotus's ridiculously exaggerated estimate of the numbers of the Persian army to give Xerxes the credit due to great foresight and organizing capacity, as shown in the mobilization of his army, in its successful march through the wild and unknown country of Asia Minor and Macedonia, in the engineering feat of bridging the Hellespont, and cutting the ship canal through the promontory of Athos (an authenticated fact), and in the collection of the supply depôts along the line of march.

fighting the contest was never even doubtful. Discipline asserted itself from the first, and maintained its power until the last Persian had been driven from Greek soil. "The Greeks," we are told by Herodotus,¹ "fought in order and preserved their ranks: the barbarians, without either regularity or judgment. . . . They discovered no inferiority either in strength or courage, but their inferiority with respect to discipline was conspicuous."²

Turning from ancient to modern history, many instances at once occur to the mind of well-disciplined forces, under otherwise unfavourable conditions, achieving remarkable and repeated successes against armies numerically superior and not less brave, but deficient in the essential quality of military discipline. The irruption of Gustavus Adolphus into Germany in the 17th century, the conquest³ of Mexico by Cortes, the present unhappy condition of Poland,⁴ our own struggles in India in 1857-58, and more recently in the Soudan, the wonderful victories achieved by the German armies in 1870-71, these are a few out of many examples which exist to remind us of the invincible influence which discipline exerts in war.

The first case quoted above is perhaps the most striking example of this influence. Embarking at the head of only 13,000 soldiers, the Swedish King, up to that time unnoticed, almost unheard of—the "King of Snow," as he was contemptuously termed in Vienna—without allies, or even the promise of assistance, but strong only as the champion of the Protestant faith in Europe, undertook of his own accord to invade the dominions of the Emperor of Germany. The result of the invasion is within the recollection of every student of military history. In little more than two years from the date of landing at Stettin, Gustavus had beaten the Imperial armies out of the field and established his power over the whole of the country which extends from the borders of Hungary and Silesia to the banks

¹ Book VIII, 86:

Λημῆται μὲν νῦν καὶ ῥωμῆ οὐκ ἐσσόντες ἦσαν διὰ περσῶν.

² The historian Grote endorses this view of the Persian overthrow in the following corroborative words: "Their signal defeat was not owing to the want of courage, but to their want of orderly line as compared with the Greeks, and to the fact that when once fortune seemed to turn against them they had no fidelity or reciprocal attachment, and each ally was willing to sacrifice others in order to effect his own escape."

³ "Singly," writes Prescott, "and with the same weapons, the Indian might have stood his ground against the Spaniard, but the success of the latter established the superiority of discipline over mere physical courage and numbers."—"Conquest of Mexico."

⁴ Poland undoubtedly owes its present divided state to the habitual want of discipline which has ever characterized Polish armies in the field. Individually the Pole is excellent fighting material: brave, chivalrous, high-spirited, possessing military instinct in a marked manner, capable of being roused to the highest pitch of enthusiasm, he has never been able to submit to the necessary restraints which the laws of military discipline impose on battle-winning armies. "Weakened," writes Alison, "in these contests with their enemies equally by their freedom as their tyranny, knowing of liberty nothing but its licentiousness, of government but its weakness, inferior to all around them in discipline, the Poles are the only warlike nation in the world to whom victory never brought either conquest or peace."

of the Rhine, and from the Baltic Sea to the Lake Constance. He achieved his conquests, moreover, against the fiercest troops and the most renowned¹ Commanders of the day. What ultimate limit would have been placed to his victorious progress, had he not been prematurely killed at Lutzen, it is impossible to say; but it was known before his death that, after securing his position in Bavaria,² he intended to cross the Inn, and establish his power in the Imperial capital of Vienna.³

The success of this wonderful two years' campaign was principally due to the excellent discipline maintained in the Swedish army. Without this discipline⁴ the genius of Gustavus, his tactical reforms, and the superior mobility of his troops, would never have carried him through his career of continuous conquest.

"All Europe," wrote the historian⁵ of the Thirty Years' War, "was astonished at the strict discipline which at the first so creditably distinguished the Swedish army within German territory; all disorders were punished with the utmost severity, particularly impiety, theft, gambling, and duelling. The Swedish Articles of War enforced frugality. In the camp, the King's tent not excepted, neither silver nor gold was to be seen: the General's eye looked as vigilantly to the morals as to the martial bravery of his soldiers; every regiment was ordered to form round its Chaplain for morning prayers. In all these points the lawgiver was also an example. A sincere and ardent piety exalted his courage. The hardships of war he shared with the meanest soldier in the army. . . . Such a leader was followed to victory alike by the coward and the brave, and his eagle eye marked every heroic deed which his example had inspired."

Strictly but kindly enforced, willingly obeyed, and never relaxed, this⁶ discipline was the secret of Gustavus's success, for it caused the

¹ Tilly, Pappenheim, and Wallenstein.

² Gustavus never went into winter quarters.

³ "History of the Thirty Years' War," by Anton Gindely; translated by Andrew Ten Brook.

⁴ "Gustavus Adolphus was the first General who grasped these facts, and who saw that mobility must be dependent on discipline."—"Précis of Modern Tactics," by Col. Home, C.B., R.E.

⁵ Schiller.

⁶ The following interesting description of the discipline maintained in the Swedish army is from the pen of Dr. Harte, who took immense pains to collect material for his life of Gustavus Adolphus:—

"The discipline between the respective contending forces was widely different, for the Imperialists had been corrupted by long prosperity. In a word, making the single exception of courage, they were just the reverse of the Swedes. One uniform succession of conquests had rendered them audacious, avaricious, and cruel. Though they had seen and performed great things, yet they were obliged to submit to younger and less experienced men, merely because they were moral, more virtuous, and better disciplined; for the camp of Gustavus was a school of order, decency, and religion. The King lived with his soldiers and knew them all. Luxury was a stranger in his camp, and so was gaming. Their hardness of constitution was such that they could extend the duration of a campaign almost equal to that of the year, being alike patient of heat and cold. Their camp was their home, their inn, their farm, their city, and their country. One would think an army no very excellent school either of learning to read or apprehending one's duty to God; yet Gustavus, and the

people of Germany, who had long been suffering under the cruel oppression of Tilly's lawless soldiery, to welcome the Swedish troops as deliverers from the Imperial yoke. Everywhere the inhabitants received Gustavus with acclamation; recruits crowded to his standards; his small force soon swelled with deserters from the Imperialist armies, and after providing for the garrisons of the strong places which he had captured, he was enabled to place nearly 35,000 men in line at his final battle of Lutzen.

It is well to dwell on these examples which so emphatically bear witness to the necessity of discipline, as the tendency of the age is rather to minimize its value, and place it in the background behind other military qualifications. We may, however, be certain that discipline is necessary now, nay, more necessary than ever, and that, altered as the conditions of war are in many respects, they still demand the observance of a strict code of discipline, not less strict than the code of Lycurgus, or that which Gustavus Adolphus drew up for the government of Swedish soldiers. The growth of wealth and luxury, the increased opportunities for self-indulgence, the craving after liberty, the levelling spirit of the age, which is becoming more and more developed,—all these influences, which are brought to bear on soldiers as well as civilians, need to be counteracted by the firm control of disciplinary law. It is not easier to face death now than it was 2,000 years ago, and if a high state of discipline did enable the Lacedæmonians to place fear of disgrace before thought for life, so is it equally necessary now to bring men up to the enemy and give them courage to die. Courage—unreasoning, reckless courage—as we have lately learnt on high¹ authority, is only the natural gift of a few individuals; but it can be acquired in a high degree by men who are bound to one another by the sentiment of mutual attachment formed in the presence of common danger. It is discipline which trains men to this sort of courage, which nerves the timid, and strengthens the weak, which makes heroes of cowards, and stimulates all to the highest deeds of daring.

The dust of education must not be allowed to blind our eyes to the necessity of discipline. Education, we are sometimes told, has superseded the use of discipline, and an instructed soldier does not require to be restrained by the strong arm of military law. Undoubtedly the spread of education does require modifications both in military law itself, and in its method of administration; but far from superseding the use of discipline, education has only increased the necessity of its existence.

Swedish Generals after his death, paid particular attention to these points. Public schools were opened every day with the same regularity as in a country town; and the moment the forces began to intrench themselves, the children went to a safe place marked out for the school."—*History of Gustavus Adolphus*, by Harte.

¹ "Fortnightly Review," August, 1888. "Courage," by General Viscount Wolsley, G.C.B. "The instinct of self-preservation comes to view at every turn. It is only the pride of regiment, of the country to which it belongs, of the traditions attached to it, and the sense of honour that springs from these sources, that can make the ordinary John Jones or William Smith so far disregard his personal safety as to face a deadly storm of bullets."

"The spirit of criticism," to quote the words of an eloquent military¹ historian, "spreads with the growth of education, and considerably out of proportion with it. The reasoning obedience which a soldier should yield is perhaps confused with an obedience which requires to know the reason of an order, instead of that which is readily yielded in the belief that what may be unintelligible in detail is necessary for the general plan. That such obedience is not always easy to give may be true. The possession with a strong will of but pigmy power is undoubtedly trying; but the self-denial which is demanded stands among the highest of all military virtues, as it is the alphabet of all military training. He only is fit to rule who has first learnt to obey."

This is how the influence of discipline steps in, and asserts its authority. Education, in fact, may either be a source of great strength or of great weakness to an army, according to the use that is made of it. If it teaches men to think without teaching them also to obey, it can only be productive of the utmost evil. If, however, limits are placed by the necessary restrictions of discipline to its otherwise boundless range, then it becomes a great moral lever of tremendous advantage to an armed force. Education and discipline, we may say, are necessary to one another. There is no antagonism, but on the contrary, close affinity between the two, and the nearer this affinity approaches complete incorporation, the greater is the influence exerted by the combined power of both forces.

The question may here be interposed, What is military discipline? What is the meaning of the term, what are its special attributes, and its sources of strength, and upon what does it depend for the power it possesses? It will, however, be impossible to give a categorical answer to these questions, or attempt to limit the use and meaning of the word which we are discussing, by a concise definition. Discipline has been defined by one² authority as "obedience to superiors": yet

¹ "History of the Royal Artillery," by Colonel F. Duncan, C.B., M.P. The value of education as a means of preserving discipline, and which is so much insisted on in the German army, was well brought out in a work which appeared some years ago on the "Army of the North German Confederation," by a Prussian General. "The instruction," he wrote, "existing in the army is of high importance both for its moral value and the military worth which is closely connected with it. Any understanding that is not quite uncultivated must comprehend that in all institutions of human society order and submission to commands are necessary, and therefore also obedience. It must also comprehend the necessity of lawful punishment for any rebellion against order and obedience; and just because he comprehends the necessity, an educated man submits to it more willingly than an uneducated one. Education is, therefore, a useful foundation for military discipline, and nourishes a sense of honour."—"The Army of the North German Confederation," by a Prussian General. Translated by Colonel E. Newdigate.

² "Drill is a means to discipline, but drill is not discipline, which may be defined as obedience to superiors."—"Précis of Modern Tactics," by Colonel Home, C.B.

Another high authority, H.R.H. the Duke of Cambridge, once said that "Dress is discipline" (see Q. 8689, "Report of the Militia Committee of 1876"). His Royal Highness did not of course intend his words to be a complete definition of discipline, but his answer is instructive as showing how many elements there are in military discipline, and how impossible it is to exhaust the meaning of the word in a single definition.

the scope of these words hardly seems wide enough to satisfy the conditions of a complete definition. For discipline, in its application to an armed force, implies something more than mere passive obedience. Xerxes commanded the obedience of his soldiers; but he did not maintain discipline in his army. The same, as we shall presently see, may be said of the relations which existed between the Duke of Wellington and the English Army during the Peninsular War.¹ Discipline is perhaps best described by saying that it is a living principle—an active moral force deriving its power from constituted authority extending from leader to follower. What the spirit is to the body, discipline is to an armed force. It is the soul of an army. It inspires the thoughts, directs the aims, and controls the actions of every individual who comes under its laws. Discipline, as the author of the "Operations of War" has pointed out, is the union of very different qualities, each of which is an important element in war. "It means cohesion of the units, and suppleness of the mass, it means increased firmness and increased flexibility, it means the most efficient combination of many and various parts for a common end."

Having thus far disposed of the introductory part of the subject under discussion, and having formed some conception of the importance of discipline to an armed force, the way seems clearer for passing to the second and more practical part of the inquiry, viz.: "the best means of promoting and maintaining it."

Discipline we have seen to be an active moral force depending for its power on its ability to impress individuals, and masses which are collections of individuals. What organization is best suited for ensuring this object? This is the first question which suggests itself for answer. (Part II.)

Then again, moral force rests upon authority, and authority upon law. What are the best laws for establishing this authority, and for investing the moral force of discipline with power, strength, and respect? This is the second question to be answered. (Part III.)

Thirdly, what are the principles which should guide the conduct of

¹ It is hardly necessary to remark that no personal similitude between the Duke of Wellington and Xerxes is intended in this passage, the full signification of which will be explained further on in the essay. It would, indeed, be difficult to conceive two men differing more widely in personal character than Wellington and Xerxes. No one understood better than the great Duke in what true military discipline consists; or how painfully ignorant many of the Officers serving under him in the Peninsula were of the plain meaning of the term. Perhaps the best definition existing anywhere of discipline is to be found in a general order dated Badajoz, 24th September, 1809, an extract from which is here given:—

"The Commander of the Forces wishes the Commanding and other Officers of the regiments, particularly the field Officers, to recollect that there is a great deal to do to keep their regiments in order besides attending to the parades and drills of the men.

"The Commander of the Forces desires that Colonel Peacocke will pay attention to the state of discipline (meaning by that word habits of obedience to orders, subordination, regularity, and interior economy) of the 2nd battalion 83rd Regiment, and 2nd battalion 87th Regiment, as well as to their parade discipline and drill."

those who are entrusted with the administration of the laws of military discipline? (Part IV.)

When answers can be found for all these questions the inquiry will be complete, and the best means of "promoting and maintaining" discipline in an armed force will have been discovered.

PART II.—*Organization.*

"An army is but an instrument, and according to the way in which you construct that instrument it will work."—The late PRINCE CONSORT.

Organization begins with the individual soldier. His treatment, training, and assigned duties should be such that he may be made the best use of when acting in combination with others. After the individual comes the first small mass or collection of individuals under an appointed leader. Two or more of these small organized masses are then combined together under the command of a superior leader. This method of collecting masses of gradually increasing strength under leaders of ascending rank is continued until the Army is built up, and a chain of responsibility stretched from the supreme Commander down to the individual soldier.

The arrangement of every armed force which pretends to be called an organized army, should be based upon this principle, viz., the gradual decentralization of authority and responsibility, from the highest leader to the lowest individual; and an examination of all the best types of armies, whether in ancient or modern times, will convince the student that perfection in discipline has been reached, or fallen short of, according as this fundamental principle of organization has been fully or incompletely adopted.

There would seem to be three leading characteristics of sound organization, which should never be lost sight of, and which are essential features of perfection. They may be stated as follows:—

(a.) *The Individuality of every Member of the Force.*—This individuality¹ should be preserved both when the soldier is acting in his individual capacity as a fighting unit, and in his corporate capacity as a portion of an organized mass. For where the observance of military discipline is concerned, the harmonious working of those laws which are necessary for its maintenance, and to which reference will presently be made, depends entirely upon the way in which each indi-

¹ On this point Lord Wolseley makes the following remarks in the "Soldier's Pocket-book": "The greater the individuality you give to the soldier himself, and to his company, and to his battalion, the more he feels that his individual conduct is of importance. No pains should be spared by Officers in impressing upon their men the consequence that attaches itself to the behaviour of each of them. Make a man proud of himself, and his corps, and he can always be depended on."

So too Frederick the Great observes: "In an army every individual part of it should aim at perfection to make it appear to be the work of only one man."—Extract from the "Military Instructions of Frederick the Great to his Generals." Translated by Major Foster.

vidual can be impressed with the necessity of obeying the laws himself, and inculcating their obedience on others.¹

(b.) *The Unity of each Mass.*—This will be found to have been a marked feature of the military systems of Lyeurgus and Gustavus Adolphus, as indeed it also was of the Roman military organization, of that established in the French Army² by Napoleon, and of the German system³ when it had been brought to perfection after the war of 1866. This unity should be preserved intact down to the lowest organized mass of individuals, and no attempt should be made to assign a conventional limit to its extension.⁴ The controversy over the size and constitution of "units," which was at one time carried on with so much vigour, has at length been settled in this sense, and the necessity is now recognized of preserving the identity not merely of the Division, the brigade, and the battalion, but of the company, the half-company, and the section. There can be no doubt that the principle⁵

¹ This principle was fully recognized and admirably brought out by the author of the Wellington Prize Essay in words which are well worth reproducing in support of the text of this essay.

"For an army," wrote Colonel Maurice, "that would be able to meet all the circumstances of present warfare with the same freedom with which the Prussian has met them, the first great necessity is that the free action of every rank, from the General to the private, should be fully developed—not in order that each rank may interfere with and claim independence from the rank above it; but in order that each may more effectually co-operate with and carry out the work assigned by that immediately superior to it."

² "Each Corps was formed into four or five Divisions, varying in strength from 5,000 to 7,000 men, commanded by Generals of Division, who received their orders from the General of the Corps. The troops in these Divisions always remained under the same Officers; the Divisions always belonged to the same Corps; no incorporation or transposition, excepting in cases of absolute necessity arising from extraordinary casualties in war, disturbed the order established in the camps. In this way the Generals came to know their Officers, the Officers their soldiers; the capacity, disposition, and qualities of each were understood. An *esprit de corps* was formed not only among the members of the same regiment, but among those of the same Division and Corps."—Alison, "History of Europe," chap. xxxi.

³ "Every man seems to be in his place, and to know his proper business. The finished intelligence of large reach and measure, which presides over the whole strategic operations of Von Moltke, is proportionally represented in every military organism, from the *corps d'armée* to the company. Miscarriage or mistake seems no more to adhere to their ordinary operations than to the working of the machinery of a cotton factory. But, when any of these masses are resolved into their parts, the units, too, of which they are formed have each had their separate training, and each is capable of acting alone in his own sphere."—"Edinburgh Review," October, 1870. "Germany, France, and England."

⁴ To again quote the author of the "Wellington Prize Essay": "What we really require is that each body shall be so perfectly built into every other that at each successive stage of the building a perfect unit shall be formed. A brick is not less complete because it is arranged in a course, or a course less regular because it is built into a wall; nor does a wall less perform the special part assigned to it because it forms one of the sides of a house."

⁵ In the English "Infantry Field Exercises" this principle is in theory extended as low down as the section of fours, which is composed of a right and left file of the company:—

"The four men composing a right and left file will be considered as comrades in the field, and will act together, not only in forming fours, but on other occasions; they should therefore take notice of one another when they are told off."—"Infantry Field Exercise," 1884.

is one of the utmost value in regard to the maintenance of discipline, for if the permanent identity of each organized mass is constantly disturbed,¹ it must be to the detriment of its unity, cohesion, and *esprit de corps*, the "union" of which qualities, as we have already seen, constitute what we understand by the word "discipline."

(c.) *The Responsibility of each Leader.*—This requires to be scrupulously maintained from highest to lowest. Regard for it ensures obedience; disregard cannot fail to lessen authority. "It is perfectly clear that to establish and maintain discipline there must be personal contact between the superior and inferior."² Military organization then should seek to draw leaders and followers together, and render this contact as close as possible. This can only be done by rigid observance of the chain of responsibility.³ No leader should ever be passed over by a superior, either in the communication of his own orders, or in transmitting instructions which he may have received from higher authority. As each individual should be taught to look to his immediate leader for action and counsel, so if he receives instructions from any superior or otherwise extraneous source, the influence of the leader is diminished, and the interests of discipline are proportionally injured.

The altered conditions of modern battles more than ever demand the decentralization of responsible leadership. The functions of executive command have indeed passed out of the hands of superior officers into those of subordinate leaders. At the most critical moments of modern battles the smallest group leaders have greater influence in determining the result of the fight than the Commander-in-Chief himself can possibly hope to exert. The maintenance of discipline will be in their hands, and must remain there till death or victory relieves them of its burden. The truth of this was long ago recognized by the Germans at the time when the late Prince Frederick Charles of Prussia addressed his famous "Military Memorial" to the regimental Officers of the Army.⁴ If it has only met with tardy

¹ Sir Frederick Roberts brought this point out very clearly in his famous Mansion House Speech on the 14th February, 1881, when he was urging the importance of not transferring soldiers from corps to corps without strong necessity:—

"When once they have been posted, if that spirit of loyalty to their own corps is to be maintained, a spirit which every soldier knows often prompts men to do so much more than their duty, they should not be removed from their regiment, except by their own choice, or at the most pressing demands of the Service."—"Times," 15th February, 1881.

² "A Précis of Modern Tactics," by Colonel Home, C.B., R.E.

³ It is impossible to exaggerate the importance of maintaining this chain of responsibility intact down to the individual soldier. However great the temporary temptation may be to break through the chain, or however apparently convenient it may seem to do so, the sin of giving way is certain to find itself out. No more fruitful source of insubordination exists than neglect of this great vital principle of military organization. It is impossible to talk for five minutes to any intelligent recruit without feeling that this is so. He likes the Army, he will tell you, he is fond of military life, and finds his duties pleasant and agreeable. He has only one complaint, and that is, that he has "so many masters," whereas in civil life he only had one. It should be the aim of organization to give him this one master.

⁴ Since these words were written their truth has received fresh confirmation in the newly issued German Drill Regulations. "The most important requirements of

belief in England, this is not because we are unwilling to learn, but because the necessity of believing it has never been brought home to English troops on a modern European field of battle. There are, however, signs¹ that the principle of decentralized leadership is at length becoming recognized in the English Army as a necessary development of the new conditions of fighting, and we may safely affirm that the more practical the shape this recognition assumes during peace training, the surer is the guarantee that discipline will be maintained in war.

The three essential characteristics of good military organization, as set forth above, will be found to have existed in the case of both those armies which have been selected for reference in this essay as models of sound discipline.

Turning first to the case of Sparta, we find the smallest recognized mass of individuals in the Spartan Army was the enomotia, consisting of 25, 32, or at most 36 men. Each enomotia had a separate captain or enomotarch, the strongest and best man in the company. He was always in the front rank, and led the enomotia when it marched in single file. Above the enomotiae were larger masses of gradually increasing strength, the pentecostae, the lochi, and the morae. The Commander-in-Chief transmitted his orders through the polemarchs, who commanded the morae, to the locharchs, from the locharchs to the pentecostarchs, and from the latter to the enomotarchs.²

The enomotia was the foundation of the Spartan organization.³

war," so runs the official preface to the Regulations, "consist in the maintenance of the strictest discipline and order, even when all the faculties are at their highest tension." It is then described how this discipline can alone be secured by the decentralization of responsibility down to the lowest individual. In commenting on these new Regulations with special reference to the English Army, Dr. Russell, who has been an eye-witness of nearly all recent European campaigns, makes the following pertinent remarks in his journal: "While we in England are jealously guarding the rights of superiors, and never descend below the Colonel and his Adjutant, the Germans not only emphasize their old custom of allowing every opportunity to the commander of each unit, but go a step further, and extend their confidence to each individual man composing those units."—"Army and Navy Gazette," 20th October, 1888.

¹ The demand for the abolition of special instructors, and for placing the instruction of recruits entirely in the hands of company Officers and non-commissioned officers, is one of the "signs" of the awakening alluded to above.

"The days of special instruction," wrote Lord Wolseley, now more than ten years ago, "for the education of recruits are numbered, and company and troop Officers must learn to teach their own men to drill, to shoot, and to ride, without the assistance of musketry and gunnery instructors, or of riding-masters."—"Nineteenth Century," March, 1878.

Without entering into the controversial part of the question, it seems clear that the interference of specialists, whether necessary or not, does contribute to divide responsibility, and, in so far as it does so, to weaken the bond of "contact" between leader and follower, or, in other words, to weaken discipline.

² So far as can be ascertained, there were four enomotiae in each pentecosta, and four pentecostae in each lochus. According to Xenophon, the mora consisted of four lochi. Xenophon and Thucydides differ slightly as to the composition of the Spartan Army, but both agree upon the principle of the triple organization as set forth in the text of the essay.

³ "It was upon these small companies that the constant and severe Lacedæmonian

The men in each of these small companies were drilled together, and bound to one another and to their leader by a common oath. The "individuality" of each member of the enomotia was strongly emphasized, and to such an extent was this carried that a Spartan soldier named Pantites, who was absent on civil business from Thermopylæ, where his enomotia was engaged, put an end to his life when he heard that his comrades had fallen.¹ Aristodemus, who was the only one of the 300 who escaped the disaster by flight, was loaded with disgrace. No one would speak to him, or offer him fire; he was branded, his face shaven, and the opprobrious term of "trembler" (*τρεσας*) was annexed to his name.² Nor, though he afterwards fell honourably at Platæa, was death allowed to wipe out the lasting infamy of his cowardice, and he was refused the usual burial rites accorded to those who were killed in battle. By such lessons as these was the necessity of discipline brought home to Spartan soldiers, who were taught to believe that the safety and honour of their country depended, not upon the skill of their Generals, nor the numbers of their troops, but on the personal exertions and individual discipline of each member of the State Army.³

It was the perfection of her military organization, and the admirable state of discipline maintained through its machinery, that marked Sparta out for leadership among the Greek States, as early as the first Persian invasion under Darius. The manner in which she was then appealed⁴ to for help and counsel at a time of imminent

discipline was brought to act; they were taught to march in concert, to change rapidly from line to file, to wheel right or left, in such a manner that the enomotarch should always be immediately opposed to the enemy."—Grote's "History of Greece," vol. ii.

¹ Herodotus, Book VII, chap. cxxx.

² *Ibid.*

³ The Macedonian phalanx, and afterwards the Roman legion, were constructed on the same broad principles of organization as those followed by Lycurgus. Both were built up from small units. The "lochos," with its single file of 16 deep, was the foundation of the phalanx. 16 "lochi" constituted one "syntagma," 256 strong; and two "syntagmas" formed one "pentakosiarchy," 512 strong. This was the ordinary regiment. Among other changes which Alexander made in the constitution of the phalanx, he put four "syntagmas" to one "pentakosiarchy," and two or more of these regiments he grouped into a "taxis," under a superior leader.

In a similar way the "century" was the foundation of the Roman legion. Two centuries—each at first 100 strong, but afterwards decreased to 60 strong when the tribes were increased in number—formed one "maniple," four maniples one "cohort," and ten cohorts one "legion."

It is not intended to discuss the constitution of the phalanx and legion at further length, but merely to point out that the high state of discipline, for which the armies both of Alexander and Cæsar were renowned, was maintained by applying to their organization precisely the same principles of decentralization and gradually descending authority which were such essential characteristics of the military system of Lycurgus.

⁴ "Grote," part ii, chap. xxxvi.—The fact that the Spartan Army came too late for the battle of Marathon, which was won by the brilliant generalship of Miltiades with Athenian troops alone, does not alter the nature of the appeal made to Sparta by Athens, or do away with the fact that her aid was considered indispensable to resist the invasion.

national danger is a tribute to the military ascendancy which she had insensibly gained over the other Greek communities. What, however, for the purpose of this essay it is specially important to note in this connection is that this ascendancy, which came to Sparta from the first naturally and without seeking on her part, and which she maintained after a long and bitter struggle with her brilliant rival, was acquired in spite of many disadvantages—such as she owed for instance to her inferior geographical position, and to the prejudices and dull intellect¹ of her people—was due to the sheer force of a high standard of discipline maintained in her army by means of a sound system of organization.²

It is time now to turn once more from ancient to modern history. After the decline of the Roman Empire military organization fell into neglect. Wars ceased to be conducted on scientific lines, and degenerated into mere contests of brute strength. Large masses of horse and foot soldiers were collected together, as best they could be, considering the want of system and consequent want of discipline. It was not till the early part of the seventeenth century that Gustavus Adolphus appeared, and once more raised war to the dignity of a science. He began by making a complete revolution in the organization of the Swedish army as he received it over from his father king.³ He broke the huge unwieldy columns, which then existed, into small self-supporting "pelotons," varying in size from 96 to 214 men. Giving each peloton a separate leader, and reducing the depth of the columns to six men—the Imperialist columns were eighteen deep—he arranged these small pelotons or companies in "battaglia," half brigades, and brigades; while, instead of placing all his troops in one line, he supported his first line with a second line of reserves in rear. Here, after an interlude of 1,500 years, we find Gustavus reorganizing his troops on the same principle which, as has already been seen, governed the organization of the Spartan armies, and which had been extended with so much effect to the Macedonian phalanx and the

¹ Grote speaks of the "selfish dulness" of the Spartans. Part ii, chap. xxxvi.

² "The military forces of the other cities of Greece, even down to the close of the Peloponnesian War, enjoyed little or no special training, having neither any small company like the *enomoty*, consisting of particular men drilled together, nor fixed and disciplined officers, nor triple scale of subordination and subdivision."—Grote's "History of Greece," part ii, chap. viii.

³ The following description of Gustavus's organization, although from the pen of a civilian, gives such an admirable idea of the changes introduced by the Swedish king that it is well worth reproducing:—

"Thus the whole army was one complicated but unperplexed machine, consisting of innumerable parties or pelotons of men, all little systems by themselves, all acting under a chieftain of their own, yet all contributing to the grand establishment of the whole together. By these means, and by the power of moving easily from place to place, he brought more hands to act than the enemy could; and, though his men might be killed, they could not be routed, for help was ever at hand, and the destruction of one part did not necessarily involve the destruction of another. The directions of the General had always free passage, as the blood is poured from the heart, and then regularly dispersed not only through arteries and veins, but even through the smallest capillaries."—"History of Gustavus Adolphus," by Harte, vol. ii, p. 23.

Roman legion.¹ It was with an army thus organized that Gustavus routed the huge solid columns of the Imperialists at Leipzig and Lutzen; and when the high state of discipline which prevailed among the Swedish troops is given, and rightly given, as the cause of their surprising victories, it is again necessary to remember that discipline without organization is only an empty title, and that the famous Swedish code compiled by Gustavus himself would have remained a dead letter incapable of practical application had he not so organized his troops that both the letter of his laws and the spirit of his own example might descend from the soldier-king to the humblest follower in his army.

No one understood better than the Duke of Wellington what an important bearing organization has on the discipline of an armed force, and when, in 1829, the Government of the day proposed to abolish corporal punishment, and adapt the stern system of repressive discipline which existed in the English army to the milder method of treatment which had been tried with so much effect in the Prussian Service, the Duke replied that it would be useless to alter the discipline without altering the organization also.

"The army of Prussia," said his Grace, "is at all times regularly organized, each battalion in its regiment, each regiment in its brigade, each brigade in its Division, each Division in its Corps d'Armée—the whole under the personal inspection of the King; so that there is not a Corps, Division, brigade, regiment, battalion, company, or individual whose conduct is not checked and controlled by his superior as well as by the view and knowledge of the whole of the profession. Compare this state of things with the British Army, with our total want of inspection and control over either Officers or men, in nearly all parts of the world, and we shall see cause for astonishment that there is any discipline in the Army at all I recommend that we should stand firm upon the establishment of our discipline as it is."²

The Government adopted the advice of their military adviser, and did "stand firm," until an improved organization which began to be extended to the Army in 1871 enabled the discipline to be gradually relaxed in severity with corresponding increase in efficiency.³

The ghastly testimony of the Crimean War may be finally cited as an illustration of the connection which exists between *morale* and organization. If in the month of August, 1855, the English Army

¹ "For the first time since the decline of the Roman legion an organized and well-disciplined army appeared in Europe."—"Life of Wallenstein," by Colonel Mitchell.

The military student is indebted to Lord Reay, who was in the King of Sweden's service, for an exact plan, showing the composition of one of Gustavus's brigades. The diagram gives the position of every Officer and soldier, and shows how each peloton is itself capable of subdivision into numerous sections under allotted leaders.

² "Memorandum on the Proposed Plan for Altering the Discipline of the Army," 22nd April, 1829, by Field-Marshal the Duke of Wellington, K.G.

³ Authority for this statement will be given in Part III of this essay.

was, as an eminent authority has asserted,¹ "in a discreditable degree of demoralization," this is only what must be expected by any nation which hurries into war without previous organization during peace. How lamentably defective that organization was when the Russian War burst on the country may be learnt from the Memorandum² on the Army which the Prince Consort drew up in 1855, and which has since been supplemented by Mr. Kinglake's caustic indictment of the "War Administration of England" in the sixth volume of his gorgeous narrative.³ Happily the lessons of the war have not been thrown away, and it is some consolation to feel that the sufferings of our troops in the terrible winter of 1854 awakened the English people to a sense of forgotten duty, and have resulted in a reorganization of the Army on lines of improvement which is being steadily maintained during these long years of continuous peace.

PART III.—Law.

"The law, which is the perfection of reason."—COKE.

"It is an intermixture of mercy and justice that will bring you fear and obedience : for too much rigour makes people desperate."—BACON.

Discipline rests, as we have seen, on authority, and authority on law. Ordinary civil law takes no cognizance of military rank, and, in order to secure discipline, it has to be supplemented by military law, which determines the functions, status, and rights of every one in the force. There are, moreover, certain offences, such, for instance, as desertion and disobedience, which, when committed by a soldier, are crimes, but when committed by a civilian are at worst only breaches of contract. Military law defines these offences, and fixes the penalties for their commission.

It is very necessary in the interests of discipline that military law should have the same status as civil law, and should, in fact, be "part of the law of the land relating to the government of the military forces, and having for its object military discipline."⁴ It is thus impressed on the soldier that while he is in the military service of his country his military character is merely "superinduced"⁵ on his civil character, and does not obliterate it.⁶ This is the view which now generally prevails with civilized nations, and especially in the case of those countries which have risen to pre-eminence in war we

¹ "The Soldier's Pocket-book," by General Viscount Wolseley, G.C.B., p. 6 of 5th edition.

² Memorandum dated Windsor, 14th January, 1855.

³ "I hazard the opinion," wrote Prince Albert, "that our army, as at present organized, can hardly be called an army at all."

⁴ Kinglake's "Crimean War," chap. iii, vol. vi.

⁵ "Treatise on Military Law," by Lieutenant Rollin. A. Ives, U.S.A.

⁶ "Manual of Military Law," War Office, 1887, chap. i.

⁶ It was well said by Mr. Clode, in alluding to the English Military Code of 1872, that "Arbitrary in its provisions and severe in its punishments, such a code, far beyond any other, needs both the sanction of experience and the weight of high authority to command loyal acceptance."—"Military and Martial Law," by C. M. Clode, Barrister-at-Law.

find their military codes, instead of deriving their authority from the prerogative powers of the Crown or Commander-in-Chief, form part of the statute law of the land. In our own Army military law remained till 1879 in the unsatisfactory position of being outside of and divorced from the civil law of England. "No permanent statute law now exists," wrote an eminent authority¹ on military jurisprudence in 1872, "the jurisdiction exercised by the military tribunals has been advisedly withdrawn from public observation. Raised as the Army originally was under an influence supposed to be antagonistic to freedom, the people have willingly remained ignorant of the peculiar laws and institutions under which both Officers and soldiers were governed."²

In 1879 Parliament took up the question, and the Army Discipline and Regulation Act of that year, re-enacted with some amendments in the Army Act of 1881, consolidated³ in one statute the provisions of the Mutiny Act and Articles of War, under which the Army had up to that time been governed. Military law in this country has now the full force and dignity of statute law, and all jealousy of the military courts has been removed, inasmuch as they derive their powers from the same source as the ordinary civil courts of the country.

The passing of this Act is an important landmark in the military history of England. From that date the English Army ceased to be an "exotic"—a caste apart from the nation, viewed with suspicion by the civil authorities, and containing in its constitution elements which were "antagonistic to freedom." It became instead a great national institution closely identified with the national life, and subject, like any other English institution, to the constitutionally exercised control of the Crown. What a portion of the Army—the Militia force—was formerly called, the whole Army may now be truthfully named—a "constitutional" force. Military obedience has been placed on precisely the same footing as civil obedience, the importance of which change in the interests of loyal discipline can hardly be exaggerated, and has a most distinct and direct bearing on the subject of this essay.

Precision, clearness, and completeness would seem to be the chief characteristics of a good military code. Offences should be distinctly specified, and penalties proportionally fixed. The powers of courts, and of executive Officers charged with administering the law, require

¹ "Military and Martial Law," by C. M. Clode, Barrister-at-Law.

² "The British Army is an exotic in England, unknown to the old constitution of the country; required or supposed to be required only for the defence of its foreign possessions; disliked by the inhabitants, particularly by the higher orders, some of whom never allow one of their family to serve in it."—"Memorandum on the Discipline of the Army," April 22, 1829, by Field-Marshal the Duke of Wellington, K.G.

³ "Thus has been accomplished, after the lapse of more than a century, a wish expressed by Mr. Justice Blackstone in his Commentaries, 'that it might be thought worthy the wisdom of Parliament to ascertain the limits of military subjection, and to enact express articles for the government of the Army.'"—"Manual of Military Law," War Office, 1887.

to be defined beyond any possibility of misconception. It is above all important in defining the summary penal powers of Officers to leave as little room for the exercise of individual personal discretion as is compatible with the necessity of fixing a maximum and minimum penalty for certain offences. It should be the aim of military law to impress all ranks with a sense of the equal justice¹ of a code to which all are amenable, and the provisions of which can be enforced against any Officer who abuses the powers conferred on him by law.

The delegation of summary penal powers is specially a matter for careful determination, and is one as to which there is considerable difference of practice among European armies. In certain countries summary powers of punishment are not conferred on Officers below the rank of company commander. This is the case with the armies of Austria-Hungary, Germany, Holland, Belgium, and Servia.² In the armies of Portugal and Greece all commissioned Officers are vested with certain penal powers corresponding to their rank.³ In the case of Russia, France, Italy, Turkey, Finland, Switzerland, and Roumania, not only do all Officers possess these powers, but even non-commissioned officers, down as low as the rank of corporal, are considered competent to inflict summary punishment.⁴ In defence of this system it is urged that everyone who is charged with maintenance of discipline requires to be vested with power to enforce obedience. It would seem, however, necessary for the just administration of military law, as it is for that of civil law, that penal power should be associated with judicial responsibility, and that if this responsibility be removed there is no safeguard against the abuse of authority. It is contrary to the accepted principles of jurisprudence to intermingle police and judicial duties, and if executive (not commanding) Officers possess proper police powers these should be sufficient to secure their authority without the addition of judicial power also. This principle⁵ is recognized in the English military

¹ "Justice ought to bear rule everywhere, and especially in armies; it is the only means to settle order there, and there it ought to be executed with as much exactness as in the best governed cities of the kingdom, if it be intended that the soldiers should be kept in their duty and obedience."—"The Art of War," by Louis de Gaya in 1678.

² "Military Law, with a chapter on the Military Law of Foreign States," by Lieut.-Colonel Tovey.

³ *Ibid.*

⁴ *Ibid.*

⁵ It was not, however, till 1879 that this principle was thoroughly recognized, when the vexed question of the duties and position of Provost-Marshal, which gave so much concern to the Duke of Wellington during the Peninsular War (vol. iv, "Gurwood Despatches," p. 311, and vol. vi, *ibid.*, pp. 517, 518), was settled by the introduction of a clause, now clause 74 of the Army Act, 1881, which restricts the duties of a Provost-Marshal to those of a police officer. He is thus deprived of the power to inflict summary punishment conferred on him by General Order of 1st November, 1811—a power which was afterwards confirmed in the 164th Article of War, by Lord Hardinge when Commander-in-Chief. This change, though apparently trifling, is in reality one of the utmost importance, both in respect of the theoretical principle of law involved, and also of the practical bearing which it must have on the future discipline of English troops in the field.

code, and while certain penal powers of minor severity are conferred on company and troop Commanders under proper restrictions and safeguards, and are not allowed to be delegated below these Officers, the exercise of full disciplinary power is confined to Commanding Officers of corps. There is thus ample guarantee against the hasty infliction of punishment on insufficient evidence, while the deliberate¹ procedure which English military law requires, strengthens the exemplary effect of the punishment awarded.

Punishment for military crime should be appropriate to the peculiar nature of the offence. The end of military discipline being to infuse a high standard of honour in an army, degrading punishments ought to have no place in a code of military law. The "custom of war" recognizes this by requiring the extreme penalty of death to be inflicted by shooting instead of by the ignominious means of hanging. For the same reason the punishment of flogging is now generally condemned on the ground that its infliction degrades the soldier, who is employed in an honourable calling. Corporal punishment did not exist in the code of Lycurgus, and though it appeared as a penalty in the regulations drawn up by Gustavus Adolphus, it was rarely if ever enforced.²

Among the armies of European States it has been retained only by those of Russia and Turkey.³ It was preserved in the English Articles⁴ of War till the passing of the Army Discipline and Regulation Act

¹ The procedure in the American Army is more deliberate than in that of any other country, the military code not conferring any summary penal powers on individual Officers, and requiring all offenders to be arraigned, even for trifling crimes, before a regimental court-martial, consisting of three members. In time of war, however, a field Officer may be detailed from each regiment to try offences committed in the field, and this Officer's court has the same jurisdiction in war as regimental and garrison courts have during peace.—"American Articles of War."

² "It was a principle with Gustavus Adolphus that even a common soldier shall rarely, if ever, receive corporal punishment; for he was fully persuaded that such a disgrace cast a damp afterwards upon his vivacity, and agreed not well with the notions which a high spirit ought to entertain of honour. It was his idea that a man of bravery would sooner forgive a sentence of death inflicted upon him by court-martial than pass by the scandal of corporal chastisement. His rule, therefore, was to degrade or banish."—"History of Gustavus Adolphus" by Harte.

³ In some codes corporal punishment is expressly forbidden, in others no mention of it is made at all. In abolishing it in 1830 the Provisional Government of Belgium described it as "insulting to Belgian soldiers, and a crime against the dignity of man."

⁴ The question was very fully enquired into by the Royal Commission of 1836, which thus summed up the evidence of a large number of Officers, non-commissioned officers, and privates, who had recorded their opinion against the retention of the lash:—

"It is said to be inefficient for its object, to degrade the character, and tend rather to harden than reform the individual. Its effect upon those who witness it is said to be that of disgust and sympathy for the offender. It is said to fail before the enemy. It is also said to be so contrary to the feelings of the country in its present state of civilization, that the public mind is irritated against it, and that circumstance alone calls for its abolition."

In spite of much strong evidence, however, against its retention, the Royal Commissioners were unable to resist the Duke of Wellington's powerful appeal not to abolish it.

of 1879, when its infliction in a modified form was only sanctioned on active service. In 1881 corporal punishment disappeared altogether from the English military code, although the civil criminal law permits its use under certain circumstances. The manner of its abolition was much criticized at the time, and was attributed in some quarters to false sentiment; but the resolution, which an eminent statesman¹ moved in the House of Commons, to the effect "that no Bill for the discipline and regulation of the Army will be satisfactory to this House which provides for the permanent retention of corporal punishment for military offences," embodied a principle which the public sense of the country recognized as sound, and in accordance with the best ideas of military jurisprudence.²

Flogging of English soldiers had in fact long stood condemned alike by its practical inefficiency as a punishment as by its degrading influence on the minds of the men. Based as corporal punishment is upon physical fear, it appealed to the very feeling to which, as Napier has somewhere remarked, English soldiers are most insensible. Flogging was for this reason powerless to deter from crime.³ But worse than this; so long as the punishment was sanctioned by English military law, it was a standing testimony to the distrust of soldiers by their own Officers, and destroyed the feeling of mutual confidence, which is—we have the word of the Duke of Wellington⁴ for it—the foundation of Military Discipline. Until the code was cleared of this blot, it was impossible to establish those relations of intimate comradeship which now mark the intercourse between commissioned Officers and the rank and file of the Army, and which, as will be shown in Part IV of this essay, are a far surer guarantee than the fear of the lash for the future discipline of English soldiers in the field. The greatest enemy this country ever had has something to teach England in regard to the treatment of her soldiers.

¹ The Marquis of Hartington.

² The question was very much complicated at the time by party feeling, and the resolution was lost by a majority of 106 in a House of 472 ("Times" newspaper, 18th July, 1879); but, after the discussion which took place, it was felt that corporal punishment was doomed. The following sweeping assertion, however, made in an influential magazine by Mr. Archibald Forbes, was allowed to pass unchallenged: "What I aver broadly is that the suffrage of the ranks would be given in favour of corporal punishment, and that too on very sound, manly, and intelligible grounds."

... It would be impossible to make war if recourse to corporal punishment was forbidden; and in making this assertion I am perfectly confident I have with me the Army, from the Commander-in-Chief down to the drummer-boy."—"Nineteenth Century," October, 1879; "Flogging in the Army," by Archibald Forbes.

It is hardly worth while now to enquire upon what evidence this "confident" assertion was made at the time, as the question has passed from the region of controversy to that of settled conviction. Mr. Forbes's statement, however, is in direct variance with the evidence of numerous Officers, non-commissioned officers, and privates who were examined before the Royal Commission of 1836; and public opinion is hardly likely to have changed for the worse between 1836 and 1879. It is a sufficient answer to Mr. Forbes to say that it has been found possible to "make war" without corporal punishment, and to secure a far higher state of discipline than was the case when "the fear of the lash was the beginning of wisdom."

³ Napier's "History of the Peninsular War" is a testimony to this.

⁴ Despatch to Marshal Beresford, Badajoz, 8th September, 1809.

"The English soldier," said Napoleon, "is brave; nobody more so. I think that if I were at the head of a number of them I could make them do anything. I would alter your system. Instead of the lash I would lead them by the stimulus of honour. Whatever debases a man cannot be serviceable. None but the dregs of the *canaille* voluntarily enter as soldiers. This disgraceful punishment is the cause of it. What honour can a man possibly have who is flogged before his comrades?"¹

A very high idea of the dignity of the military profession is inculcated in the Articles of War of the American Army. Not only are corporal punishments, such as branding and flogging, positively forbidden,² but confinement in a penitential prison cannot be awarded unless the offence is also one under the common law of the United States.³ The crime of desertion is associated with a peculiar degree of dishonour, and by the civil statute⁴ law a soldier, who has been convicted and punished for deserting, forfeits all rights of citizenship, and is for ever afterwards incapable of holding any office of trust or profit under the United States. It is also worthy of notice, as an instance of the spirit which pervades the American Articles of War, that the award of extra guard duty as a punishment is prohibited;⁵ and when, during the Civil War, a soldier was sentenced to perform a certain number of extra guards, the Secretary of War refused to confirm the sentence of the court-martial, and in a general order to the Army called the attention of Officers to the "danger of associating with the honourable and important duty of guards any idea of punishment or degradation."⁶

¹ "Napoleon in Exile," by O'Meara.

When it is asked what is to be done with the "*canaille*," the answer is that there is no place for such people in the reformed Army of England. The following evidence of a private in the Guards, who was examined before the Royal Commission of 1836, may be quoted as showing the feeling of the rank and file of the Army at that time in regard to corporal punishment. Much other similar evidence was recorded:—

Q. (1179).—Do you say that flogging is degrading to the man himself?

A.—Very much so.

Q. (1184).—Supposing the power of inflicting punishment at the halberds were done away with do you think it would make it easier to obtain recruits?

A.—I think it would.

Q. (1186).—When an immediate example is necessary—as a man's refusing in the face of the regiment—what is your opinion of the punishment of such a man for the sake of example?

A.—I would imprison him. If that had no effect I would discharge him from the regiment. Such a man is not fit to be there.

² Article 38.

³ Article 97.

⁴ Revised Statutes, 1998.

⁵ Military Law (U.S.A.), by Ives, chap. xii, p. 173.

⁶ *Ibid.*, chap. XII, page 173.

So also when a court-martial sentenced a soldier for absence without leave to a year's prolongation of his service, the sentence was quashed by the War Minister on the ground of its impropriety. "The military service of the United States," to quote the words of the general order, "has always been considered honourable. It does not, therefore, comport with the honour, dignity, or security of the Service to

In fixing scales of punishment for military offences it should be borne in mind that the object of punishment is to deter¹ others rather than to reform the individual punished. "I consider all punishments," wrote² the Duke of Wellington in 1813, "to be for the sake of example, and the punishment of military men in particular is expedient only in cases where the prevalence of any crime, or the evils resulting from it, are likely to be injurious to the public interests." Prompt, certain, regular,³ and exemplary⁴ punishment secures the object in view better than the infliction of lengthened and severe penalties. Publicity⁵ is an important fact to be considered in regard to the exemplary effect exercised; and was invariably insisted on by the Duke of Wellington during his campaigns. The shame of public punishment, even when short and light, brings home to all concerned the certain consequences of crime. The idea is much countenanced in the German Army, and when an Officer or soldier is reprimanded, the publication of the censure in garrison orders is frequently resorted to, and has been found to have powerful effect in promoting that high condition of discipline which characterizes German troops both during peace and war.

That severity is not necessary to deter from crime may be seen from the remarkable diminution in punishment in the English Army which occurred in 1887, at the beginning of which year new disciplinary instructions were issued by His Royal Highness the Commander-in-Chief, directing courts-martial to reduce the severity of their sentences, while at the same time the summary powers of Commanding Officers were enlarged. Commenting on this fact, the "Times" newspaper wrote as follows on the 18th October last:—

use it as a punishment for an offender. Such use will go far to destroy the *esprit de corps* which is so essential to the efficiency of an army."—*Ibid.*

¹ "The object of the penal element is more to deter others than for the effect on the individual subjected to punishment."—"Punishment and Prevention of Crime," by Colonel Sir E. F. Du Cane, K.C.B., Surveyor-General of Prisons.

² Letter to Major-General Lambert, dated St. Jean de Luz, 28th November, 1813.

³ "According to this mode of procedure the trial and punishment of an offender will not be quite so quick as we might wish, but it will be certain and regular."—Extract of a letter of Sir Arthur Wellesley to Colonel Murray, dated Bombay, 1st April, 1804.

⁴ "The repression of crime by corrective discipline depends mainly on the punishment operating widely as an example."—"Aide-Mémoire to the Military Sciences," part i, vol. iii.

⁵ G.O., dated Cartaxo, 4th March, 1811.

"As the object in assembling the troops in any station to witness a punishment is to deter others from the commission of the crime for which the criminal is about to suffer, the Commander of the Forces requests that upon every occasion on which the troops are assembled for this purpose, the order may be distinctly read and explained to them, and that every man may understand the reason for which the punishment is inflicted."

Public punishment of this nature, deliberately inflicted for the sake of example, after due consideration and hearing of evidence, is not to be confounded with the hasty, intemperate reproof of juniors by seniors in the presence of others. The maintenance of discipline specially requires this to be guarded against, and in the case of the English Army resort to this method of rebuking juniors constitutes a breach of regulations.—"Queen's Regulations," para. iv, s. vi.

"The substitution of comparative leniency for severity has in the first year diminished more serious crimes by about 15, and more venial irregularities by about 10 per cent. That these figures constitute honest evidence may be deduced from the fact that they apply, though in varying proportions, to every arm of the Service, to almost every place in which a portion of the Army is quartered, and with rare exceptions to every regiment. They are, we may assume, not affected by incidental, local, or special considerations, and they tell us plainly that throughout the Army a considerable diminution of severity has been at once followed by a considerable diminution of crime. We are beginning," the writer goes on to say, "to learn that long terms of imprisonment have a demoralizing rather than a deterring influence, and that we can have the Army better behaved without them. Not improbably if the enlightened general orders of 1887 in the direction of leniency were to be further extended the result might be still better."

Military degradation and summary dismissal have been found to act as powerful deterrents from crime in those armies in which a high spirit of honour and discipline have been encouraged. Dismissal was Cæsar's chief punishment for military crimes. Holding, as he did, that the Roman military service was an honourable calling, and one upon which a premium should be placed, he never allowed an unworthy legionary to follow his standards. During his last campaign in Africa he publicly degraded and dismissed¹ several superior Officers of the 10th Legion, who had been convicted of inciting the men to mutiny.² At an earlier period of his wars, finding his Officers were afraid to march against the German chief, Ariovistus, he told them in the presence of the whole army to take their men back to Maly, and he would go forward alone with the 10th Legion. "Upon this," says Plutarch, "the 10th Legion deputed some of their corps to thank Cæsar. The other legions threw the whole blame on their

¹ The following are the words of Cæsar's sentence: "You, Caius Arrianus, instigated soldiers in the service of the State to mutiny against their Commanders. You oppressed towns which were under your charge. Forgetting your duty to the Army and to me, you filled a vessel with your own establishment, which was intended for the transport of troops, and at a difficult moment we were thus left through your means without the men whom we needed. For these causes and as a mark of disgrace I dismiss you from the Service, and I order you to leave Africa by the first ship which sails.

"You, Titus Salienus, Marcus Tiro, Caius Ausinas, Centurions, obtained your commissions by favour, not by merit. You have shown a want of courage, and encouraged a mutinous spirit in your companies. You are unworthy to serve under my command. You are dismissed, and will return to Italy."—Cæsar's "Commentaries."

² In setting before the Roman people a high standard of military honour Cæsar was only carrying out the traditions of Roman policy, which made military service the first duty of every citizen. How high this standard of duty was is shown during the Second Punic War, when the Senate refused to allow the refugees from Cannæ to join the army of Marcellus.

"The Senate could see no reason for entrusting the service of the Commonwealth to men who had abandoned their comrades at Cannæ while they were fighting to the death."—Livy, Book XXV, 5-7.

Officers, and all followed him with great spirit and alacrity."¹ In the case of the English Army, the right, which is provided by the Army Act of 1881,² to discharge soldiers from the Service has of late years been largely used by courts-martial, and by those "competent military authorities" who are empowered to carry out the discharge of unworthy men. The adoption of this system, which was recommended in 1869 by the Royal Commission on Military Punishments, and is a necessary consequence of other important reforms introduced into the Army, is having a marked effect in improving the tone and discipline of English soldiers.³ The following statistics, extracted from the General Annual Return of the British Army for 1887, show that this is the case during the last decade:—

	1877.	1887.
Strength of the Army, exclusive of Officers and warrant officers.....	182,442	201,621
Number of men fined for drunkenness.....	25,909	21,122
Proportion of these per 1,000 men.....	140	104
Number of minor punishments.....	282,687	249,448
Proportion of these per 1,000 men.....	1,549	1,237
Number of court-martial punishments.....	15,154	11,683
Percentage to average strength.....	8	6
Net Loss from deserters.....	2,554	1,453
Proportion of net loss from deserters to 1,000 men ...	14	7
Number discharged by purchase ⁴	2,970	1,493

In the case of those armed forces which are recruited by voluntary means and not by conscription, the conditions of enlistment of recruits, of their periods of service, appointment, transfer from corps to corps, re-engagement, and discharge, as well as the duties of recruiting authorities, require to be determined by law. Upon the wisdom of such law, and upon the degree with which it is in sympathy with the habits and customs of the civil population, must depend in a large manner the discipline of the armed force which is raised under its authority. In conscript armies the duties of the recruiting officers are periodical and mechanical; but in voluntary armies they are constant and responsible. The physical conditions of the enlistment of recruits need not be discussed in this essay as they only have a

¹ Plutarch's "Lives"—"Julius Caesar."

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³ "The only head under which there was an increased waste for 1887, was discharge for misconduct. This, however, was not owing to increased misbehaviour on the part of the soldier, but to the fact that discharges for misconduct were much more freely authorized. The Service has in every way benefited thereby."—"Report of Inspector-General of Recruiting," 2nd February, 1888.

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remote bearing on discipline. They are regulated, on the one hand by the wish of the State to secure the best physical material available for its soldiers, and on the other hand by the ever-varying conditions of supply and demand, and by the attractions which civil life may offer as compared with military service. Age, however, is a matter of very direct concern to discipline. As a rule, the younger a man enters the Army the better. Habits of discipline are more easily acquired in early manhood than later on in life, when the character of the recruit has been already formed. If recruits are taken for military service at an early age, the necessity of closely inquiring into their antecedents and character is not so important, for it is the function of discipline to form character, and to mould the rough material into required shape. Similarly mental proficiency need not concern the recruiting officer when the recruit is young, and when facilities exist for mental improvement after enlistment. These considerations all point to the necessity of obtaining recruits at an early age, and where, as is now the case in England, service with the colours during peace is regarded as a period of training for the reserve, in which the military strength of the country really rests in war, there would seem to be good reason for assimilating the age of recruits to that fixed for conscript armies. As regards the English Army this would involve a reduction in the limit of age from 25 to 20 or 21 at highest.¹ If difficulty were found in obtaining a sufficient inflow of recruits at such ages, it would then be necessary to consider whether it would not be preferable to increase the attractions of military service by offering higher rates of pay, or other advantages, than to continue a system which enables deserters and men discharged for misconduct from the Army to elude the vigilance of the recruiting and approving officers, and re-enter the ranks. Public attention has been much drawn of late to this question of fraudulent enlistment, and in the interests of discipline and the further development of the reorganization of 1871, some drastic change in the recruiting law seems necessary to stamp out an evil which is one of great magnitude.² The feeling of the country has been so often expressed against any attempt to revive the practice of branding, or even against marking Officers and soldiers on entering the Army, that it would be useless to discuss any such proposal under existing circumstances. A reduction in the age of recruits would undoubtedly strengthen the hands of the recruiting officers in their efforts to prevent fraudulent enlistment.³ Whether

¹ If recruiting continues to improve at the same rate as has been the case in recent years, there would be little difficulty in reducing the limit of age. In his Report for 1887, the Inspector-General of Recruiting wrote as follows on the 2nd February last. "The Army is now up to its establishment, and the real difficulty at present is to keep it from overflowing." Out of 31,234 recruits who joined the Army in 1887, 23,382 were under the age of 21.

² "It will be seen that the cases of fraudulent enlistment still continue frequent. . . . In 1887 no less than 2,235 men serving in the Army claimed their discharge under the Royal pardon as having fraudulently enlisted."—"Report of Inspector-General of Recruiting," dated 2nd February, 1888.

³ A further remedy may be found in the proposal made by the Inspector-General of Recruiting that an attempt to fraudulently enlist into the Army should be an offence at common law.

this change is eventually made or not, the last word on the discipline of the English, or any other voluntarily recruited army, will always rest with the recruiting officers, and with the higher authorities who are responsible for the laws which guide them in performing their duties.¹

PART IV.—Administration.

"No General can accomplish the full work of his army unless he commands the soul of his men as well as their bodies and legs."—SHERMAN.

Good law will not alone secure good discipline in an armed force. Good administration of the law is also required. Fear of punishment prevents open crime, but is no guarantee against its "screened existence." Nor will fear promote a sense of duty, or of honour, or *esprit de corps*, and without these elements discipline is a mere negative quantity instead of an active force. Prison discipline,² it may be said at once, is not military discipline, and in discussing the conditions necessary to ensure the latter in an armed force, this is the first fact to lay hold of, and with regard to which a right understanding is indispensable. The stern repression which is required to control the felon will crush the spirit and destroy the self-respect of the soldier. Cheerful, ready, loyal obedience is not obtained by driving men into sulky submission. "Discipline should be iron," said Skobelev, with the recollections of Plevna still fresh in his memory. "There can be no doubt about that: but it is established by moral authority of Officers over their men, not by the use of force."³

No better example can be quoted in support of this assertion of

¹ How true this is may be seen from the following description of English soldiers in 1829 by the Duke of Wellington:—

"The man who enlists into the British Army is in general the most drunken, and probably the worst man of the trade or profession to which he belongs, or of the village or town in which he lives. There is not one in a hundred of them who, when enlisted, ought not to be put in the second or degraded class of any society or body into which he may be introduced; and they can be brought to be fit for what is called the first class only by discipline, and the precept of the old soldiers of the company, who, if not themselves in the second or degraded class, deserve to be placed there for some action or other twenty times in every year."

The question as to how discipline should be "promoted and maintained" among such men must indeed have seemed beyond the reach of any law, no matter how well drawn up, or how wisely administered.

² Even in the case of convicts it has been found that "force is no remedy," and the "moral" treatment of civil prisoners has led to a constant annual diminution of the convict population of Great Britain. In 1852, the convict population was double what it is now, while the general population was only two-thirds of its present strength. Sir Edward Du Cane attributes this to the establishment of reformatories and industrial schools, and to the endeavours, which are now made in all prisons, to "work on the higher feelings of the prisoners directly by moral, religious, and secular instruction, and indirectly by ensuring industry, good conduct, and discipline through appealing to the hope of advantage or reward."—"Punishment and the Prevention of Crime," by Sir Edward Du Cane, K.C.B., Surveyor-General of Military Prisons.

³ "Skobelev," by Nemirovitch Dantchenko.

Skobelev's than the fate of the Persian army under Xerxes—already used to illustrate arguments brought forward in the early part of this essay. Xerxes relied on the "use of force;" while Spartan discipline rested on "moral authority." Before crossing the Hellespont the Persian monarch called before him Demaratus, an exiled king of Sparta, and explained the principles upon which he ruled his army.

"They who, like us, are under the command of one person, from the fear of their leader, and under the immediate impression of the lash, are animated with a spirit contrary to their nature, and are made to attack a number greater than their own; but they who are urged by no constraint will not do this."

Demaratus pointed out in reply that the Spartan view of discipline was exactly opposite to that held by Xerxes, resting as it did, not on fear, but on a high sense of duty, which enforced obedience even unto death.

"Although free, the Spartans are not so without some reserve; the law is their superior, of which they stand in greater awe than your subjects do of you: they are obedient to what it commands, and it commands them always not to flee from the field of battle, whatever may be the number of their adversaries. It is their duty to preserve their ranks, to conquer or to die."¹

There have been armies, such for instance as the Prussian Army under Frederick the Great,² and the English Army under the Duke of Wellington,³ which, governed on the principles laid down by

¹ Herodotus, Book VII, chap. ciii, civ.

² "He worked on man only through his passions; he, in fact, regarded the race as machines of organized animal matter to be moved into action, or restrained from activity, by the force of material things. As he thus appears to have considered man as an automaton, or mass of animated matter, he was led to despise him, and to mock the idea of his mental independence. He employed force as an engine of government, civil or military, and in this manner he laboured to extinguish independence of mind, which is all that gives value to man as a rational being. . . . It is generally known that the impression of fear was the principle assumed by the King of Prussia in driving the Prussian recruit into military form."—"Formation, Discipline, and Economy of Armies," by Jackson.

An army disciplined by fear may win battles; but it can never hope to achieve permanent political results. How insignificant were the political results of the Seven Years' War as compared with those of the Seven Months' Campaign of 1870-71! German unity would never have been accomplished by Frederick the Great.

"The elevated feelings which are necessary to the best kind of army were then wanting to the Prussian Service. In those ranks were not found the religious and political enthusiasm which inspired the pikemen of Cromwell, the patriotic ardour, the thirst for glory, the devotion to a great leader, which inflamed the Old Guard of Napoleon."—"Macaulay's Essays,"—"Frederick the Great."

³ The following answer to a question put to the Duke of Wellington by the Royal Commission of 1836 gives in the Duke's own words a description of the English military system of discipline as in vogue during the Peninsular War: "I have no idea of any great effect being produced by anything but the fear of immediate corporal punishment. I must say that in hundreds of cases the very threat of the lash has prevented very serious crimes. It is well known that I have hundreds of times prevented the most serious offences by ordering the men to appear with their side arms. The first thing I did was to order that all the men must appear, if they appeared in the street at all, in their side arms. That was the first thing. I then

Xerxes, have yet been victorious in the field. The success of both these armies, however, was due to other causes than their discipline, which in neither case was founded on any durable basis. It lasted so long as the influence of fear remained, and disappeared when its pressure was removed. No one can read the account of the Peninsular War without coming to the sorrowful conclusion that the state of discipline of the English Army at that period of its history was as bad as it possibly could have been. It was not only that excesses, fearful and disgraceful, were committed after the assaults of fortified places, but at all times, except only in battle, whether in advance or retreat, on the line of march and in cantonments, down to the very end of the campaign, the conduct of the troops came under the continual censure of their Commander. Writing to the Military Secretary from St. Sever, as late as the 8th March, 1814, the Duke of Wellington thus alludes to the discipline of the Army:—

“There is no crime recorded in the Newgate Calendar that is not committed by these soldiers who quit their ranks in search of plunder.

. . . . There is not much difficulty in posting a British Army for a general action, or in getting the Officers and men to do their duty in a general action. The difficulty consists in bringing them to the point where the action can be fought, and in the exertion to be made afterwards to derive all the advantage which any other troops in the world would derive from victory. . . . I have always found we lose more men in a pursuit than we do in any general action. . . . In ordinary circumstances, that is to say, when the army is quietly encamped in a position or cantonment, all goes on well enough, and the ordinary regimental discipline is sufficient to keep the soldiers in tolerable order, but when an exertion of any kind is to be made, the whole machine falls to pieces.”

When it came to actual fighting the splendid courage of the Officers and soldiers, directed by the genius of their great Commander, brought victory to the English arms, but the results of victory were never what they might have been had the discipline of the troops enabled the Duke of Wellington to make the most of his successes. As it was, each hard-won battle seemed only to be the signal to prepare for a new encounter, and each advance but the precursor of another retreat. It is impossible to follow the tedious progress of the campaign, relieved only as it was by the heroic deeds of our brave countrymen, without feeling that had the same state of discipline existed in the English Army in 1809–12 as characterized the Swedish Army in 1630–31, the retreats after Talavera and Salamanca would never have been necessary, and the Duke of Wellington, sweeping the Peninsula of Spain as Gustavus swept the territory of Germany, would have established his army in Paris before Napoleon had extricated himself from Moscow.

The greatest soldiers in the world—Alexander, Cæsar, Gustavus ordered that the rolls be called every hour; and all those restraints were enforced by the fear of the lash. If it were not for the fear of the lash, who would appear in his side arms? I was quite sure that no man would venture to disobey, because if he ventured to disobey it would come to corporal punishment.”

Adolphus, and Napoleon—all comprehended the superior value of moral power over that established by fear, and a study of their lives shows that this power, which each possessed in a very high degree, never deserted them even at times of greatest peril, "Fly, cowards, I will subdue the world without you; Alexander will never want soldiers as long as he can find men,"¹ such were the words with which Alexander rallied his troops when on the point of being abandoned in Asia. Cæsar's² methods of enforcing discipline have already been described, but another allusion to his life will perhaps be pardoned if only to recall the prompt way in which he brought the mutineers of the 10th Legion to their knees by means of one word³ pregnant with meaning to those who had so often followed him to victory.

With Napoleon⁴ moral power was an art as well as a gift, and he owed his extraordinary influence over French soldiers not merely to the "personal magnetism" of his character, but to his habitual study of the means of rousing their enthusiasm and exciting their military

¹ "Plutarch's Lives"—"Alexander and Julius Cæsar compared."

² The moral hold which Cæsar had of his legions is testified to by nearly every writer on Roman history, though curiously enough Dr. Arnold, who has done ample justice to Hannibal's memory, could find nothing admirable in the character of Cæsar.

"Such likewise was the affection of his soldiers, and their attachment to his person, that they who under other Commanders were nothing above the common rate of men, became invincible where Cæsar's glory was concerned, and met the most dreadful dangers with a courage nothing could resist."—"Plutarch's Lives"—"Julius Cæsar."

Another authority writes: "A born ruler, he governed the minds of men as the winds drive the clouds. . . . No General has ever collected an army out of unyielding and refractory elements with such decision, and kept them together with such firmness."—"Momsen's History of Rome," vol. iv.

"Truly," writes Montaigne of Cæsar, "he ought to be the breviary of all true soldiers as being the absolute and perfect pattern of military profession. . . . No General of war had ever so much credit with his soldiers."—"Montaigne's Essays."

³ He addressed them as "*Quirites*" (citizens) instead of by the usual familiar name of "*Commilitones*" (comrades) telling them at the same time they might retire into civil life as he did not want them any more.

⁴ One of the finest instances of Napoleon's moral power occurred in the Italian Campaign of 1796, when he restored discipline among the men of Vaubois' Division after their disorderly retreat on Verona. Both Officers and men had displayed great cowardice and want of discipline in abandoning their position at the front, but instead of tying them up to the halberds, Napoleon addressed them in the following words: "Soldiers, I am not satisfied with you. You have shown neither discipline nor constancy. You have yielded on the first reverse. No position was sufficient for you to rally at. There were some in your retreat that were impregnable. Soldiers of the 85th and 39th, you are no longer French soldiers. Give me those colours, and let me have written on them, 'They belong no more to the Army of Italy.'" Then we are told by La Cases, writing at the dictation of Napoleon, "that a gloomy silence prevailed through the ranks, and the old soldiers were seen to wipe away their tears. 'General,' they cried, 'place us in the vanguard, and you shall see whether we belong to the Army of Italy.'"

The above is a typical example of the effect so often produced by Napoleon's addresses and proclamations to his troops. Florid, high-flown, and sometimes written in deplorable taste, his words nevertheless went straight to the heart of the French soldiers, and over and over again restored them to a sense of their forgotten duty.

spirit. After all that has been said of Gustavus Adolphus his name can now be passed over, but Hannibal must not be forgotten, as, though mentioned last, his life affords the most notable example in military history of the moral ascendancy of man over man. Hannibal is the only great General of ancient times whose memory history has never been able to slander.¹ Although the records of his career are scanty, and derived from foreign sources, the simple narrative of his life is sufficient testimony to the constancy of his conduct and the chivalry of his character.² In that brilliant sketch of the great Carthaginian soldier, which Dr. Arnold happily lived to revise, Hannibal's military characteristics are thus alluded to:—

"As a General his conduct remains unchanged with a single error. . . . His knowledge of human nature and his ascendancy over men's minds are shown by the uninterrupted authority which he exercised alike in his prosperity and adversity over an army composed of so many various and discordant materials, and which had no other bond than the personal character of their leader. . . . The long inactivity of winter quarters, trying to the discipline of the best national armies, was borne patiently by Hannibal's soldiers. There was neither desertion nor mutiny amongst them; even the fickle men of the Gauls seemed spell-bound. For the Gauls and the Spaniards and the Africans were overpowered by the ascendancy of Hannibal's character; under his guidance they felt themselves invincible. With such a General the yoke of Carthage might seem to the Africans and Spaniards the natural dominion of superior beings."

The foregoing considerations, supported as they have been by a few out of many examples which can be cited from military history, seem to establish the fact that moral authority is a matter of upper-

¹ Even such a hostile critic as the Roman historian Livy thus writes of Hannibal: "Such was his behaviour, and so conciliating, that in a short time the memory of his father was the least among the inducements to esteem him. Never man possessed a genius so admitted to the discharge of offices so very opposite in their nature as obeying and commanding; so that it was not easy to discern whether he were more beloved by the General than by the soldiers."—Livy, Book XXI, chap. iv.

² The best authorities reject Livy's account of the slack discipline maintained by Hannibal during the winter of B.C. 216 in Capua. If some indulgence was allowed to the troops after the severe campaigning which ended with Cannæ, this must have been speedily checked when the army marched out of Capua in the spring of B.C. 215. An army so debauched and disorderly as that pictured by Livy in the 18th chapter of Book XXIII could never have remained, unaided and unrecruited, for thirteen years after the victory of Cannæ in a hostile country, and then finally embarked unopposed when Hannibal was recalled to Carthage.

As regards the charge of cruelty, which Livy brings against Hannibal, it is noteworthy that neither he nor Polybius instance any single specific act to substantiate the general charge.

No act of Hannibal's during all his wars can be compared for inhumanity with the manner in which the Consul Nero announced Hasdrubal's defeat to the Carthaginian Chief by throwing his brother's head in front of Hannibal's outposts.

The story about Hannibal compelling the Roman prisoners who were taken at Cannæ to fight as gladiators in his presence, rests on no better authority than that of Diodorus and Pliny, and ill tallies with the clemency shown by the release of the prisoners taken at the Battles of the Trebia and Lake Trasymene.—Polybius III, p. 85.

most moment for the promotion and maintenance of discipline in an armed force. How can such moral authority be acquired, or, in other words, what should be the relations existing between Officers and soldiers, and how far should these relations be carried in the course of daily duty? This is the final question which remains for investigation.

The first great necessity, and one which is the foundation of true military discipline, is that Officers should know their men. Moral authority depends on personal power, and this can only be acquired by an intimate acquaintance with those whom it is sought to influence. The excellent discipline maintained in the German Army of the present day is undoubtedly due to the closeness of the intimacy which binds the soldier to his Officer.¹ In our Army the regimental Officers, down to a period as late as the outbreak of the Crimean War, lived wholly apart from their men,² and during peace the "personal contact" (the value of which was explained in an earlier part of this essay) can hardly be said to have existed at all. Generally speaking the soldiers only knew their Officers as awarding them punishment. As during the Peninsular War, so at all times, English Officers have led their men in battle with the utmost bravery, but when fighting was over their duties to those under them were formerly supposed to have ended.³ In natural consequence discipline, which was maintained with a stern hand in the presence⁴ of the

¹ "The Captain and his assistants, the company Officers, occupy themselves almost continually with their men. These two classes are brought into very close personal relations without prejudice to discipline, but rather with a contrary effect. This happy reciprocity has this merit, that besides the genuine military spirit which prevails in the army generally, in the most murderous battles of the present war the soldiers followed their leaders amid the destructive shell, mitrailleuse, and chassépot fire of the enemy, with a devotion which was truly touching. The soldier has confidence in his Officer, and the Officer knows that he can depend on the soldier."—"Army of the North German Confederation," by a Prussian General.

² To such an extent was this separation of Officers and men carried in those days that, on the death of Sir John Moore, the Duke of York drew attention in general orders to the marked exception which that great disciplinarian was to the general rule of Officers.

The following are the terms of the G.O. :—

"The character of Sir John Moore exhibits one feature so particularly characteristic of the man, and so important to the best interests of the Service, that the Commander-in-Chief is pleased to mark it with his peculiar approbation. The life of Sir John Moore was spent among the troops."

³ "Our Officer," wrote the Duke of Wellington in 1829, "is a gentleman; we require that he should be one, and above all that he should conduct himself as such; and most particularly in reference to the soldier, and to his intercourse with the non-commissioned officers and soldiers. Indeed, we carry this principle of the gentleman, and the absence of intercourse with those under him, so far, that in my opinion the duty of a subaltern Officer, as done in a foreign army, is not done at all in the cavalry or the British infantry of the line. It is done in the Guards by the sergeants. Then our gentleman Officer, however admirable his conduct on a field of battle, however honourable to himself, however glorious and advantageous to his country, is but a poor creature in disciplining his company in camp, quarters, or cantonments."—"Memorandum on the Discipline of the Army," by Field-Marshal the Duke of Wellington, K.G., 29th April, 1829.

⁴ There were occasions, however, when even in the presence of their Officers the

Officer, was relaxed behind his back. The Duke of Wellington repeatedly expressed his bitter sense of disappointment at the feeble touch kept by Officers on their men, and his general orders and despatches home during the Peninsular War abound with reflections on their conduct. In his letter to the Military Secretary written from St. Sever on the 14th March, 1814, as already quoted, he gave vent to his feelings in the following words:—

“I have no hesitation in attributing the evil to the utter incapacity of some Officers at the head of regiments to perform the duties of their situation, and the apathy and unwillingness of others, and to the difficulty, if not impossibility, of punishing any Officer for neglect of duty when he is to be tried by others, each and all of whom have been guilty of the same if not greater neglects. I attribute the want of discipline in the Army entirely to the regimental Officers who neither know, nor understand, nor endeavour to carry into execution any of the Orders of the Army which have for their object the prevention of the committal of crime.”

In spite of all his efforts, and his own fine example, which was never at fault, the Duke of Wellington was unable to instil discipline into the armies which he commanded. For the system which he was required to administer was radically defective, and in the presence of such defects as existed individual effort was powerless to achieve any lasting good. “Habits of obedience to orders, subordination, regularity, and mutual confidence between Officers and soldiers,” these qualities, which constitute the Duke of Wellington’s definition of discipline,¹ are not the sudden outcome of war, but the gradual result of systematic training during peace. It was a sense of helplessness to cope with acknowledged evil which seemed to increase the disappointment of the great English Chief, and led him, not always generously, to attach blame to individuals who were in no way responsible for the system which they had been taught to follow.

The change of system dates from the close of the Crimean War. Then, for the first time in the history of the English Army, the regimental Officers began to undertake duties which had previously been relegated to non-commissioned officers. Forsaking the rôle of

spirit of disorder ran riot among the soldiers. The following G.O. is by no means a solitary instance of its kind:—

G.O., Lesaca, 8th October, 1813.

1. The Commander of the Forces is concerned to be under the necessity of publishing again his orders of the 9th July last, as they have been unattended to by the Officers and troops which entered France yesterday.

2. According to all the information which the Commander of the Forces has received, outrages of all descriptions were committed by the troops in the presence even of their Officers, who took no pains whatever to prevent them.

3. The Commander of the Forces has already determined that some Officers so grossly negligent of their duty shall be sent to England that their names may be brought under the attention of the Prince Regent, and that His Royal Highness may give such directions respecting them as he may think proper, as the Commander of the Forces is determined not to command Officers who will not obey his orders.

¹ G.O., Badajoz, 24th September, 1809.

policemen, they sought to qualify themselves as the instructors, the trainers, the masters of their men. The alteration in the system of enlistment which took place later on increased the necessity for the interference of Officers, as it decreased the number of trained men and non-commissioned officers available for instructing recruits. In carrying out these new responsibilities, the Officers were compelled to associate with the rank and file in a way that was never before necessary. This intercourse is no longer confined to hours of drill and instruction, but is continuous during times of recreation—at athletic meetings and evening amusements, which are now as much matters of concern to English Officers as the actual official duties of their men. The intimate comradeship which has thus been created between Officer and soldier is having a marked¹ effect in raising the tone of the rank and file of the Army, and in correspondingly raising the discipline.

The Duke of Wellington was not a military reformer; but had he lived to see the working of the new system described above, and which has enabled His Royal Highness the Commander-in-Chief to dispense with the halberds and rely on the General Orders of 1887² to maintain discipline, he would surely have endorsed the words which have been chosen as the motto for this essay, and which were uttered on a memorable occasion by a late venerable Englishman³—"Force is no remedy."

Passing now from the special case of the English Army, which, however, is particularly adapted to illustrate the arguments contained

¹ "Of late years there has been a great change taking place in the relations between Officers and men, and the social standing of soldiers has year by year improved."—Extract from speech of Major-General Sir Redvers Buller, V.C., K.C.M.G., Annual Meeting of the Soldiers' and Sailors' Families Association, 5th May, 1888.

² In his evidence given before Lord Randolph Churchill's Committee on the Army Estimates (Q. 2553, Second Report), Colonel Lascelles, A.A.G. at Headquarters, described the change introduced by the General Orders of 1887, as "One which may almost be called a revolution in the administration of the discipline of the Army."

³ Mr. Bright. Speech at Birmingham, 16th November, 1880. "Force is no remedy." Though uttered by a member of the Peace Party, these words might have been appropriately placed at the head of the Circular Memorandum addressed by H.R.H. the Duke of Cambridge to General Officers commanding districts and Officers commanding corps in introducing the changes made by the General Orders of 1887, in the administration of discipline in the Army. The following extract from this Memorandum shows the spirit in which these changes were conceived:—

"Love of his regiment, and a regard for its reputation, soon come to the young soldier, and he should be impressed with the conviction that it is his interest, and should therefore be his object, to maintain its high name and character by his own individual good conduct. He should learn to feel, through the manner in which he is dealt with by his Captain and his Lieutenant-Colonel, that they are solely actuated by this regimental feeling, by their love of the Army, and the deep interest they take in the reputation of all their comrades of every rank. Nothing tends more to impress soldiers with this conviction than the maintenance of a healthy, manly discipline with the minimum of punishment."—Extract from Circular Memorandum, War Office, 1st January, 1887.

It is interesting to compare this with another Circular Memorandum quoted further on, and dated Freneda, 28th November, 1812.

in this essay, to a more general consideration of the subject under discussion, there are certain characteristics of sound disciplinary administration which it may be well to examine in regular order.

I. *Popularity*.¹—This, as may be supposed from what has already been said, is not to be despised as an element of power in promoting discipline in an armed force. A popular Officer can command obedience at times when another Officer would only receive a half-hearted support. It is important, however, to notice that popularity is not acquired by courting its advent, but rather by avoiding the appearance of seeking it. The most popular Officer, whether General or subaltern, is he who is most firm, most just, most hardworking, most attentive to the wants of his men, most able to lead them in war and train them in peace. The best disciplinarians—using the word disciplinarian as it is understood in its application to such men as Hannibal, Cæsar, and Gustavus Adolphus—have always been popular with their followers. Cæsar's popularity with the 10th Legion is proverbial, yet the discipline of the 10th was firmer and stronger than of any other Roman legion. Gustavus Adolphus was worshipped by his soldiers, and we have seen how perfect was the discipline of the Swedish armies, both before and after victory. Skobelev, perhaps more than any other Commander of this generation of soldiers, commanded the love of his followers; yet no General ever exacted more from his troops, worked harder with them, or maintained a stronger rule over them. The 16th Division, which he commanded during the Russo-Turkish War of 1877-78, was a model of exemplary discipline. "There was scarcely anywhere a corps," writes an eyewitness who accompanied Skobelev during his famous march from Kazanlik to Adrianople, "where the power of the Officers was greater or the discipline more severe."²

II. *Attention to Details of Interior Economy*.—This is specially a matter of concern to junior regimental Officers. "The discipline and regularity of all armies," wrote the Duke of Wellington,³ "must depend upon the diligence of the regimental Officers, particularly the subalterns." Material comfort is essential to healthy morale, and a contented army has always been found to preserve its discipline. Everything connected with the soldier's welfare and training—his pay, clothing, food, health, education, and amusements—should be a matter of concern not to an orderly Officer changed from day to day, but to the immediate superior Officer⁴ of the soldier in question; and

¹ "The greatest talent of a General," writes Plutarch, "is to secure obedience through the affection he inspires."

² Nemirovitch Dantchenko. Skobelev was born a leader of men, and possessed, in a high degree, that "personal magnetism" of character which Lord Wolseley describes as necessary to a successful Commander. The Russian authority quoted above thus alludes to Skobelev's relations with his men: "He was not one of those Generals who like their men at a distance. The dandified, spoilt, and fastidious Skobelev could live the same life as his soldiers, share their discomforts, their squalor, and their privations, and do this so easily that they were not astonished at it."

³ Despatch to Viscount Castlereagh, Abrantes, 17th June, 1809.

⁴ This is a most important point in the maintenance of discipline. It is some-
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the "moral authority" of the Officer is strengthened or weakened just in proportion as he exercises, or neglects to exercise, direct personal supervision over details of interior economy. What it is of special importance to emphasize is that the force of discipline should be binding at all times and in all places. A soldier ought to have one nature, and one only, and that nature should always be disciplined, and everywhere under control. The system which teaches him to have two natures—one, for parade and another for the barrack-room, one before his Officer and another behind his back—such a system will not satisfy the conditions which are essential for success in modern war.

III. *The Force of Example.*—This is another important element in the relations between Officers and soldiers. In the enforcement of discipline in an armed force, example¹ has even more influence than precept. A high, bright, cheerful example coming from above will be speedily caught up below. A superior can exact readier obedience from an inferior when he himself shows a readiness to obey. The obedience, too, that is here meant is not mere technical compliance with orders, but loyal submission to superior will. An Officer receiving an order should seek to catch its tone, as well as understand its letter, and should pass it on in this spirit to those below him. Nothing is so detrimental to military discipline as any inclination to "carp"² at orders received, or to criticize them in a spirit adverse to the intentions of the authority from whom the orders emanated.

"Subordination in the Officers is the soul of discipline; for if they do not exhibit the most explicit obedience in executing orders given to them, their example will soon be followed by the soldiers, and pervading the whole army will taint the very principle of military order."³

IV. *Regularity.*—Regular administration is also essential to the promotion and maintenance of discipline in an armed force. Relaxation of rule is fatal to discipline, which, it should never be forgotten, is hard and strict, and requires the practice of habitual self-denial. In time of war when the reality of active service is present, the

times said that "duty has to be got through," but that it does not much matter by whom, and that the orderly Officer can very well perform it for other Officers. If, however, the arguments brought forward in this essay are worth anything at all, they do oppose a most distinct contradiction to this notion of "duty," which is not something to be "got through" merely for name's sake, but to be performed by Officers in the interest of their own self-discipline, as much as in the interests of their men. Everything depends on the close union of Officers and men in small bodies, and upon this union being maintained intact on all occasions.

¹ "Unless we should ourselves set an example of obeying strictly the orders of our superiors, we cannot expect that our inferiors will obey ours."—Extract from letter of the Duke of Wellington to the Conte de la Bisbal, dated Freheda, 17th March, 1813.

² This was another difficulty the Duke had to contend with during the war in Spain. Writing to Mr. Stuart on the 11th September, 1810, he observed that there "was a spirit of 'croaking' in the Army which is highly injurious to the public service, and which I must devise means of putting an end to, or it will put an end to us."

³ Essays on "Military Duties and Qualities," by Lieutenant-General Lord de Ros.

necessity of discipline is always apparent, but during peace the temptation to relax routine and soften law continually recurs. The tendency to yield to this must be resisted, and a sustained effort made to preserve discipline at constant high pressure. Idleness is particularly to be guarded against as a fruitful source of deterioration in discipline.

"An army is composed for the most part of idle inactive men, and unless the General has a constant eye upon them, this artificial machine will very soon fall to pieces, and nothing but the bare idea of a disciplined army will remain."¹

The value of barrack life cannot be exaggerated. A militia force is never so highly disciplined as a regular force which is kept in barracks or camp, when the touch between all ranks is constantly preserved. During periods of long-continued peace, camps² of exercise should be resorted to, and the reserves of the National Army called out for training. It was in the Camp of Boulogne³ that Napoleon perfected the discipline of the French Army which gained the victories of Austerlitz, Jena, and Wagram.

V. *Self-discipline*.—The necessity of self-discipline should be constantly impressed on all ranks of an armed force. It was with this idea in view that so much stress was laid in Part III of this essay on the principles which should govern the laws of discipline. In order to secure self-discipline, or, in other words, the co-operation of all ranks in preserving order among themselves, military law must be clear, straight, intelligible, and immutable.³ Unless this is so, the necessity for obeying the law cannot be brought home to those concerned, and the virtue of obedience will be degraded into mechanical submission to superior will. Immutability of law is assuredly a point of extreme importance. There will remain ample scope for wise and circumspect administration even when the law is so immutably fixed as to be placed beyond risk of disturbance by arbitrary alterations and personal whims of individual Officers who are entrusted with the duty of administering it. It would be easy to multiply instances of the stress laid upon self-discipline by great Commanders of both ancient and modern times. A notable example occurred when Xenophon assumed command of the Ten Thousand Greeks after the Battle of Kunaxa. "Above all things," he said, in

¹ "Military Instructions of Frederick the Great to his Generals;" translated by Major Foster.

² "Satisfied with their lot in this great encampment, the soldiers were singularly tractable and obedient. Constantly occupied and amused by the spectacle of sea-fighting or frequent reviews and mock battles, they neither murmured at the exactions of a rigid discipline, nor experienced the usual monotony and languor of a pacific life in camp. . . . Constant employment was the true secret both of their good health and docile habits. Neither Officers nor soldiers were ever allowed to remain any time idle."—Description of the Camp of Boulogne, Alison, chap. xxxix.

³ Immutable as far as regards those who have to administer its provisions. The necessity of altering military law from time to time, and adapting it to meet the ever-changing conditions of a progressive science, is indisputable. This, however, is the function of the governing authorities, not of executive Officers.

his first address to his troops after his election to the chief command, "let us maintain order, discipline, and obedience to the Commanders, upon which our entire hope of safety depends. Let every man promise to lend his hand to the Commander in punishing any disobedient individuals."¹ It was owing to the loyal support which Xenophon received during his celebrated retreat from all his followers, and which he secured by his own tactful command, that the force was extricated from the desperate position in which it was placed after the seizure and execution of the Greek Generals by Tissaphernes. So well maintained was the self-discipline of the force to the very end of the retreat that when outrages were committed by some individual soldiers at Kerasus, Xenophon called the army together, and demanded the punishment of the mutineers, who were sentenced to death by the unanimous vote of the assembled troops.²

VI. *Self-respect*.—Self-discipline is the result of self-respect. No opportunity should therefore be lost of developing this latter quality in every Officer and soldier. In this connection praise and blame are useful factors, provided they are apportioned with discrimination. Praise when merited promotes friendly emulation, when undeserved it only fosters jealousy. Blame should be reserved for censuring crime, and not used to condemn errors of judgment or mistakes at drill. Officers must bear in mind that when their instructions are not carried out exactly as they intended, the mistake is generally owing to the instructions being incomplete, and therefore not understood. It is of importance in encouraging self-respect to strengthen the hands of subordinate Officers and non-commissioned officers, and most particularly to avoid weakening their authority by hasty and intemperate censure in the presence of their inferiors. Mistakes should be quietly and deliberately corrected, and not seized on as occasions for indiscriminate abuse. Much might be written on this subject alone, but it would be impossible to find better words than the

¹ Xenophon: "Anabasis," III, pp. 2, 25.

² *Ibid.*, V, pp. 27—30, and Grote, chap. lxxi.

Xenophon's speech on this occasion, and his appeal to the troops to obey him and the subordinate Generals on the ground that they had all been elected by the universal suffrage of the army, abound in matter calling for deep reflection on the part of the military student.

Grote thus alludes to the speech in chapter lxxi of his "History of Greece." "This," referring to the election of Xenophon, "is the cardinal principle to which he appeals, as the anchorage of political obligation in the mind of each man, as the condition of all success, all safety, and all conjoint action; as the only condition either for punishing wrong or protecting right; as indispensable to keep up their sympathies with the Hellenic communities, and their dignity either as soldiers or citizens. The success of the speech shows that he knew how to touch the right chord of Grecian feeling. No serious acts of individual insubordination occurred afterwards, though the army collectively went wrong. And, what is not less important to notice, the influence of Xenophon himself, after his unreserved and courageous remonstrance, seems to have sensibly augmented."

Montaigne, in his essay on Julius Cæsar, gives a remarkable, and presumably authenticated, example of the self-discipline of Cæsar's troops, "when, having had some defeats near unto Dyrrachium, his souldiers came voluntarily before him, and offered themselves to be punished, so that he was more troubled to comfort than to chide them."—"Montaigne's Essays."

following, which are a perfect essay in themselves, and which, though written with special application to the English garrison of India, are profoundly true of the relations which ought to exist between the Officers and soldiers of all armed forces:—

“All depends in the various gradations of military control on the spirit in which the controlling power is exercised, and on the tact of him who exercises it. Be kind, considerate, and conciliatory; scrupulously regard the feelings of those under you; avoid aught that can weaken their legitimate authority, or diminish the respect of their inferiors; treat not blunder as a crime; assume that what is evidently unknown is simply something forgotten; and if you have to do with well-conditioned men, not as an offence. I speak from the experience of more than forty years both in civil and military life. I can only plead my profound conviction that the British soldier, even of the roughest stamp, is, if wisely and kindly treated, susceptible of culture—physical, intellectual, moral, and professional—far in excess of that which is generally supposed to be attainable by him; that just as you approximate a private soldier intellectually, morally, and professionally to the standard of his Officers, do you increase his commercial value; and that the interests of India demand that the highest possible culture of all kinds should be bestowed on the members of the English garrison, and the highest possible development given to their capacities both individual and corporate.”¹

These are not the words of a mere military student, but of a practical English soldier—James Outram, the “Bayard of India.” They are weighty words, and their weight is increased by the fact that they were written soon after the termination of those terrible struggles round Lucknow, and were doubtless inspired by the recollection of the discipline which the writer had maintained during long months of severe trial in the gallant little garrison of the Alum Bagh.

PART V.—*Conclusion.*

“We are an excellent Army on parade, and an excellent Army to fight; but we are worse than an enemy in a country; and take my word for it that either defeat or success would dissolve us.”—WELLINGTON, Letter to Lord Castlereagh, June 17, 1809.

The principles laid down by Sir James Outram are the principles which are gradually taking root in the British Army, and which received official ratification in the General Orders of the 1st April, 1887. That the new system of administration is working to a successful issue may be seen from the figures of consecutive annual Returns. There is better evidence, however, than the evidence of figures. There is the testimony of war itself. The contrast between the disorderly conduct of the English troops during the retreat from Burgos in

¹ “Miscellaneous Questions affecting the Organization and Efficiency of the Indian Army.”—Memorandum by Sir James Outram, Bart., G.C.B.

1812, and the discipline maintained in all the recent operations of the Army, whether in Afghanistan, Egypt, or elsewhere, is an indisputable witness to the truth of statistical evidence.

For what were the circumstances of the retreat from Burgos? The retirement of the Army had become necessary for strategical reasons, not after defeat, but after a victorious campaign, which had included such successful operation as the capture of Ciudad Rodrigo and Badajoz, the assault of Almaraz, and the Battle of Salamanca. The Army was not pressed by the enemy, nor were the marches long, nor the weather inclement, nor the privations great;¹ yet the discipline of the troops so deteriorated that the historian of the Peninsular War estimates the loss from stragglers at not less than 9,000,² and describes the retreat as being marked throughout by most "intolerable disorders" due to the "habitual negligence of the regimental Officers." So incensed was the Duke of Wellington with the conduct of the troops that, when he arrived in winter quarters, he issued that celebrated Circular,³ the justice of which Napier⁴ is reluctantly compelled to admit,⁵ and which will remain on record as the most scathing rebuke a General in the field has ever addressed to an Army under his command. "I am concerned," wrote the Duke, after enumerating the irregularities committed, "to have to observe that the Army under my command has fallen off in this respect (discipline)

¹ *Vide* Lord Wellington's Circular to Officers Commanding Divisions and brigades, dated Freneda, November 28, 1812.

² Napier. The following extracts from the "History of the Peninsular War" may be quoted to illustrate the want of discipline which characterized the retreat:—

"Five hundred of the rear-guard, under Cole, chiefly of one regiment, broke open the houses, plundered, and got drunk. On this occasion there was no want of provisions, no hardships to exasperate the men, and yet I, the author of this History, counted on the first day's march from Madrid seventeen bodies of murdered peasants."

Again he writes—

"Such outrages were perpetrated on the inhabitants along the whole line of march that terror was everywhere predominant, and the ill-used drivers and muleteers deserted by hundreds. Hence Kennedy's operation in some measure failed; the greatest distress was incurred, and the Commissariat lost nearly the whole of the animals and carriages employed; the villages were abandoned, and the under-commissaries were bewildered and paralyzed by the terrible disorder thus spread along the line of communications."

Again, later on in the retreat—

"The Army bivouacked in the evening behind the Manilla stream; but though the march was not more than 12 miles the stragglers were numerous, for the soldiers, meeting with vast herds of swine, quitted their colours by hundreds to shoot them, and such a rolling musketry echoed through the forest that Wellington at first thought that the enemy was upon him. It was in vain the Staff Officers rode about to stop this disgraceful practice; it was in vain that Wellington himself caused two offenders to be hanged; the property of whole districts was swept away in a few hours, and the Army was in some degree placed at the mercy of the enemy. The latter, however, were content to glean the stragglers, of whom they captured 2,000."—Napier, Book XIX, chap. v.

³ Dated from Freneda, November 28, 1812.

⁴ Napier's "Peninsular War," Book XIX, chap. vii.

⁵ Napier, however, exonerates the Guards and the Light Division.

to a greater degree than any army with which I have ever served, or of which I have ever read."¹

Turning now to the case of the retreat of the River Column down the Nile in 1885—a small measure of war as compared with the retreat of the English Army from Burgos in 1812, yet none the less useful as an illustration—we find a totally different state of discipline in existence. The order for this retreat, which like the retreat from Burgos, was also undertaken for strategical reasons, came upon the troops as a crushing disappointment;² yet, so far from leading to misconduct, the signal to turn back seemed only to stiffen the discipline which had marked the advance of the column under physical difficulties without parallel in war. "I cannot," wrote the Officer in command of the column on the occasion of its break up, "close this report without dwelling upon the splendid behaviour of the regimental Officers, non-commissioned officers, and men of the column. The life of the men has been one of incessant toil from the first to the last day of the expedition. In ragged clothing, scarred and blistered by the sun and rough work, they have worked with constant cheerfulness and increasing energy. *Their discipline has been beyond reproach*: and I do not hesitate to say that no finer, more gallant or more *trustworthy* body of men ever served the Queen than those I had the honour to command in the River Column."³

If a further example is asked for from recent English military history, there is the case of the now historic march undertaken by Sir Frederick Roberts from Cabul to Candahar in 1880, during which operation of war not a single man was lost by straggling, and not a single instance occurred of serious crime. The discipline maintained was as perfect as it is possible to exact from any troops, and was due, as Sir Frederick Roberts repeatedly said⁴ after his arrival in England, to the loyal co-operation which he received from all ranks in his efforts to preserve order. "I may say with truth," he said in his speech at the Fishmongers' Hall, "that there was not an Officer or man, British or native, who was not animated by the same high spirit of courage and discipline, which are so essential to all military success."⁵

When, then, the question is asked, as it has been in the subject of this essay, by what means discipline can be best promoted and main-

¹ Is it possible to conceive the circumstances under which Lord Chelmsford, or Lord Wolseley, or Sir Frederick Roberts, or any other General who has lately commanded troops in the field, would have to address such words to English Officers and soldiers of the present day?

² The Officer in command of the column describes the effect of the order, when he first received it, as sending a "cold shiver" through him.—"The River Column," by Major-General H. Brackenbury, C.B.

³ Despatch of Brigadier-General H. Brackenbury, C.B., to General Lord Wolseley.—*Vide* "The River Column."

⁴ See his various speeches, especially that delivered in the Mansion House when the freedom of the City of London was conferred on him.—*Vide* "Times" report, dated February 15, 1881.

⁵ Fishmongers' Hall, December 10, 1880.—"Times" report, December 10, 1881.

tained in an armed force, the answer is to be found, not only in the numerous illustrations existing in both ancient and modern military history—a few only of which have been quoted in these pages—but especially in the experience of the English Army during the last 100 years. That experience shows that true military discipline—discipline, that is to say, which is equally maintained before, during, and after battle; discipline which is relaxed neither in victory nor in defeat—can only be secured by the moral power of Officers deriving their authority from good law wisely administered by means of a sound system of organization. How moral power is acquired, and what are the attributes of good law, wise administration, and sound organization, it has been the endeavour of the writer, however unworthily, to show during the course of this essay. Imperfectly brought forward as the arguments have been, there is some consolation in feeling that the lessons of history are a witness to their truth; and it is for this reason possible to assert, not in any spirit of egotistic confidence, but with the force derived from confirmed conviction, that no other way of promoting and maintaining discipline in an armed force exists except that which it has been attempted to describe in this essay, which is now respectfully and humbly submitted for the consideration of the Council.

All that it seems necessary to ask leave to say in conclusion is that, as with our allies, so with ourselves, finality has not yet been reached. Much remains, much must always remain to be done in the further progress of that new departure, which was openly taken last year. The general orders of 1887 have committed us to a "revolution," from which there can now be no loophole of escape. Having put our hands to the plough it is not possible to look back. The spirit of an army can no more lie fallow than the spirit of an individual. It is for ever living, moving, changing. While we take care that it moves onward in its course of conservative progress it is for us—the Officers, non-commissioned officers, and men of the Army—to see that it moves, not by leaps and bounds, but patiently, surely, hopefully, and always kept under the influence of firm control. Not with pessimist minds, not with any hankering after the dry bones of bygone days, yet ever mindful of the lessons of history, must this movement be directed by those, to whom it has fallen to carry forward into a bright future the traditions of a glorious heritage. Then shall be presented to the world such a spectacle as has never yet been seen, of a great National Army, voluntary in its origin, democratic in its sympathies, imperial in its instincts—loyal to its Sovereign, loyal to its country, loyal to itself, respected and self-respecting—a tremendous weapon of resistless strength,

"A glorious company, the flower of men,
To serve as model for the mighty world,
And be the fair beginning of a time."

Tennyson's "Guinevere."

Friday, March 8, 1889.

GENERAL SIR C. P. BEAUCHAMP WALKER, K.C.B., Vice-President, in the Chair.

FORAGE FOR MILITARY PURPOSES.

By GEORGE FLEMING, C.B., LL.D., F.R.C.V.S., Principal Veterinary Surgeon of the Army.

I AM not aware that the subject of forage for military purposes has yet been brought before the Members of this Institution for consideration and discussion; and yet it is one which, from several points of view, certainly deserves notice, especially from those who have to provide for the wants of mounted corps, whether during peace or in the field, as well as the Officers of these corps. While in quarters the subject may not seem of any moment, and particularly if the forage is abundant and of good quality; for then it is provided by the contractor in the usual manner, and, if it meets with the requirements of the contract, no further heed may be given to it. But if it is of indifferent quality, or the contractor is not moved by conscientious scruples, either as to quantity or quality, then the case is different; and only those Officers who have had long experience of forage and forage inspections know what vigilance and care are demanded in guarding against deception, and consequent injury to their horses, either from deficient quantity or improper quality.

The supply of forage in the field is always of importance, sometimes urgently so, and it is to this supply that I shall mainly allude in the brief space of time allowed me. For if it be true that the hay and corn market is not so expensive as the horse market in peacetime, then it must be accepted as still more true during war, when horses are so necessary, so difficult to replace, and when so much depends upon their being maintained in the highest state of efficiency. At all times it must be recognized that bad food makes bad horses, and insufficient food produces weakly ones; and while at any time bad or weakly horses are undesirable, on active service they are most objectionable in every way.

In considering the subject of forage for military purposes, I propose, with your permission, to deal with it under the following heads, and chiefly with a view to the requirements of field service: 1st. Different kinds of forage; 2nd. Concentrated forage; 3rd. Compressed forage.

1st. Different Kinds of Forage.

The usual food of horses in this country, and over the greater part of Europe, is oats and hay, with sometimes a certain proportion of straw. In some parts of Spain, as well as in North Africa and Asia Minor, the grain given is usually barley, with chopped or broken straw. In South Africa and America, maize is largely used, with hay and straw. In India, gram and cooltee are the principal grains, and freshly gathered grass is chiefly used instead of hay and straw.

For the present, we will consider oats, hay, and straw as constituting the classical forage ration of army horses in Europe; other articles being substituted only in special circumstances, when the supply of these is too expensive, inadequate, or altogether fails. It must be remarked, however, in speaking of these substitutes, and especially with regard to grain, that they can rarely be resorted to suddenly. The horse appears to be peculiarly impressionable to abrupt changes from one kind of food to another—more so, perhaps, than any other of the domesticated animals; and this must be seriously taken into account in considering the question of forage for army use. This impressionability is related not only to the horse's physiological constitution, but also to his natural fastidiousness and delicacy of taste. He requires a long time to become reconciled to some kinds of food, no matter how suited they may be to his organization; and when a strange forage is put before a number of horses, it is curious to note the different ways in which individuals will take to it. Some will eat it without hesitation, others after a day or two, others will eat it sparingly and never take to it kindly; while some others, again, will not even try it, and will sink from hunger exhaustion with the food lying before them.

Physiologically, sudden changes from one forage to another are often productive of very serious consequences, and many instances of grave damage to troop horses from this cause might be mentioned. I need, however, only allude to the great mortality which occurred among the horses of our mounted corps, immediately after the Battle of Waterloo, when the Allied Armies were advancing on Paris, due to the horses being fed chiefly on growing wheat, for lack of other forage; and also to the heavy damage done to our army horses in the Crimea, when they were given barley instead of oats, the supply of the latter having failed. Injury of this kind is more or less related to the digestibility of the food, a matter of importance in regard to this subject.

In Oats we have, undoubtedly, the best of all the grain foods for horses, as they contain, in a concentrated form, all the elements necessary for supplying waste of tissue, and especially that of the muscles; while they are, as a rule, easily digested. For horses performing hard work, there is no grain equal to them, though it must be admitted that horses can undergo severe exertion on other kinds of grain, such as barley and maize.

The nutritive value of oats is about equal to that of hay, though owing to their more ready digestibility and relatively small bulk, they

are preferable to it when time, transport, and capacity are of moment. And besides their value as an aliment, it would appear that oats contain that which has not yet been found in any grain food given to horses, in the form of a stimulating principle which, acting upon the nervous system of horses, gives them more energy and stamina while developing their muscular powers, and has altogether a favourable influence on their condition when they are taxed by work. M. Sanson has discovered this principle in the husk, and having isolated it, has experimented with it upon horses. To this may be attributed the superiority of oats over barley, maize, and other grain, in sustaining horses for long periods of severe exertion, when stimulation, as well as pabulum, is needed.

In judging of oats for food, it is well to remember the characters by which good may be differentiated from bad oats. In the first place, each grain consists of two parts, husk and kernel, the latter possessing considerable alimentary value, and the former scarcely any at all; so that oats which contain the largest proportion of kernel are those which are most serviceable to the horse. The relative proportions of kernel and husk vary considerably in different kinds of oats; in some samples the husk forms as much as 35 and 40 per cent. of the oats, while in good grain it may be as low as 20 per cent. It is of importance sometimes to estimate the feeding value of oats, and this can readily be done by separating the kernel from the husk by hand in a number of seeds, and weighing each. This gives a better and a more practical indication than is afforded by the external appearance of the oats, their colour, or their weight collectively. It may be noted that oats which have the smallest proportion of husk are those which are most readily and thoroughly digested, and that crushed oats are more quickly and perfectly digested than when they are whole.

The weight of oats is not altogether a trustworthy index to their nutritive value, though it is that which is generally adopted; the thickness of husk and its separation from the kernel, as well as the dryness of the grain, will influence its density. M. Grandean compared many samples of oats, and found a rather wide diversity between them, with regard to their natural weight and nutritive value. Thus, in different samples of oats, all weighing 57 kilogrammes to the hectolitre (125½ lbs. to 2¾ bushels), he ascertained that the nitrogenous matter was 8.19, 8.71, 9.74, 9.50, and 10.42 per cent., demonstrating that there is not a fixed relation between the richness in the useful elements in oats, and their density or weight.

It is also to be observed that the oats grown in various countries differ much in quality, in nutritive value, and in digestibility.

There can scarcely be a doubt that the contract weight (38 lbs.) per bushel of oats for army horses is too low, and especially when we know that they are chiefly obtained from Sweden and Russia, where the quality of this grain, and particularly the Swedish, is rather inferior. At least 40 lbs. to the bushel should be made the minimum standard; and it is needless to add that they should possess all the characters of sound and clean oats. Musty oats are particularly dangerous and instances

are innumerable of the damage done to horses by feeding them on such grain. One notable instance is recorded of such injury being inflicted on troop horses, in the case of the 12th Lancers. That regiment formed part of the British Army which occupied France for three years after the Battle of Waterloo, and the horses were fed chiefly on oats which had become heated and musty in the stores, where they had been collected in large quantities.

Other kinds of grain food are sometimes substituted, wholly or partially, for oats, according to circumstances, but, as I have said, they cannot be recognized as equal to them. Maize approaches them closely, and forms the chief, often the only grain food of horses in several parts of the world. In South Africa, our troop horses have been fed upon it and performed good service; and during the French expedition to Mexico, the horses and mules sent from France received no other grain and did well upon it. In the United States of America and in Mexico it is the staple food of working horses, and in Europe it is now largely used, being even grown in some parts. General Rosenberg introduced it into the ration of the horses in the Prussian Army some years ago; and in Spain, Portugal, Italy, Hungary, and the Rhine Provinces, it has long been recognized as well adapted for horses performing hard work. It is very digestible and economical, and may replace one-third, two-thirds, or even the entire ration of oats, weight for weight, if the seeds are broken previously. In South Africa the maize is given in stalk to the horses, these stalks and heads being known as "mealies."

Barley, as already mentioned, is rarely used in this country as food for horses; in France and Italy it is only given in the South. In the East it is almost the only grain allowed, not so much perhaps because it is preferred to oats, as because these cannot be grown in warm countries. In Spain, barley and chopped straw constitute the only forage, and the horses thrive well on it. In 1823, when the French Army entered that country, the cavalry and artillery horses soon became accustomed to it, and no ill effects were observed.

Rye is not a desirable food for army horses, and the same may be said of Wheat. Millet is sometimes given to horses, especially in Southern Russia, where it grows abundantly; and, as jawaree, it is used for the same purpose in some parts of India and in North China. It is said that the Belooch mares in the Western Punjab receive scarcely any other grain, and they perform the severest marches on it.

Bran enters more or less into the ration of troop horses, especially on ship-board, where it is very useful. In the infirmary stables, for sick horses it is most valuable. The chief drawback to its use in the field hitherto has been its great bulk, inflammability, and tendency to become sour and mouldy in a short time, if exposed to damp. All this is entirely obviated by compressing it into large dense cakes, which are almost weather and fire-proof, contain a great quantity in a small bulk, and are easily transported.

Of the pulses, the most important is undoubtedly Beans, which should form a portion of the grain ration of all horses performing very

long and severe labour, as they are a very stimulating and nourishing food. But beans require careful inspection, as they are so often unsound and infested by parasites. They should be split or cracked before they are given to horses.

Peas rarely enter into the ration of the troop horse in Europe, probably because of their being rather indigestible; though Gram, a kind of pea, is largely employed in India.

Other grains are sometimes given to horses, but so seldom as not to merit consideration here.

The different grasses furnish a very large proportion of the food of horses, and are more or less valuable according to their botanical order and condition. They are described as natural and artificial; the natural ones being true grasses, and the artificial not so, as they contain the clovers, lucerne, sainfoin, and others of a like character, and which are rarely given to army horses.

The natural grasses are those best adapted for horses performing fast work, as they are less bulky and more easily digested. They are not given in the green state in Europe, unless occasionally in small quantity, as they contain too much water, and are unsuitable for working horses. When properly dried, however, in the form of Hay, they constitute an essential portion of the daily ration, and one-third of their weight in this state is more than equivalent, in nutritive value, to the full allowance in the green or undried condition. Hay varies considerably in feeding value, according to not only the grasses which enter into its composition, but also according to the situation, the soil, the districts, and even the countries in which it is grown; and also to the manner in which it is preserved or made.

It would be out of place here to describe the different kinds of hay and the characteristics of good hay, as they should be familiar to all who have to do with the provisioning or feeding of horses.

Suffice it to state, that hay should always be of recognized good quality, both of growth and preservation. It is the natural food upon which horses can live all the year round without any grain, so long as they are not doing any or much work; as it maintains the temperature and the vital functions when no unusual demand is made upon them. But to supply the waste of the body caused by work, an abnormal quantity of hay would have to be consumed, and this would prove injurious. On the other hand, horses cannot live on grain alone. Experiments have demonstrated that after a week or ten days' feeding on good oats only, they gradually eat less, become dull and heavy, lose weight and condition, and are evidently sick of the too stimulating and concentrated food.

Much discussion has arisen as to whether it is best to give the hay long or cut. When given uncut, there is no doubt that much of it is wasted, and a considerable time is consumed in masticating it. Persons who employ a large number of horses find it more economical to have the hay chopped and mixed with the grain; and for army horses, and especially when on picket lines, chopped hay would prove a great boon, as the loss in the daily allowance is considerable, particularly if the weather be wet or windy. But the difficulty in obtaining it pre-

pared in this way during peace-time is an obstacle, and in the field it could not well be fed to the horses unless a different kind of feeding-or nose-bag were provided.

I shall recur to this point, however, in a few minutes; merely remarking that the bulkiness of hay, and especially if it be long, is a great drawback to its use on active service. It requires much transport, is easily damaged by wet, is very inflammable, and is troublesome to issue. It is a terrible encumbrance to the cavalry soldier when it has to be carried loose in the regulation hay-net. I know of nothing which can prove more worrying and hampering to cavalry in a charge, in passing through a thickly wooded or scrub-covered country, or in crossing streams or rivers, or even in wet weather, than hay-nets distended with hay. These should be abolished.

With regard to straw I have but little to say, as it does not enter into the food ration of our army horses, and is only allowed as litter. Though horses are sometimes partial to it, yet it contains very little nutriment, and it is too bulky and indigestible for horses performing hard or fast work. A small proportion, if sweet and chopped, gives bulk to the feed, and causes the horse to masticate his oats. For this purpose oat straw is preferable to any other. The difficulty attending the transport of straw prohibits its use in the field, where it certainly can be dispensed with.

2nd. *Concentrated Forage.*

At various times attempts have been made to feed horses upon specially prepared foods, with the view of presenting nutriment in a concentrated and more readily assimilable form, and also, for armies, with a view to portability in addition.

In books on the training of horses published during the last century, directions are given for the production of what was called "horse bread;" and during this century, experiments have been numerous with various kinds of artificial and specially prepared foods for horses, more particularly for those employed during war.

I have already remarked that horses are extremely dainty in their food, and even in the matter of grass and grain to which they are unaccustomed, they will often prefer starvation to eating it. To animal food, especially, they have a particular objection, and the slightest trace of it in their ordinary forage will sometimes cause them to reject it. Their sense of smell is more acute than that of taste, though that is also highly developed. Yet, notwithstanding this delicacy of taste, horses will in time get over their prejudices, and eat what is otherwise very foreign to their nature and habits. In Iceland, for instance, the horses have no scruples at all in eating fish.

Not long ago, M. Müntz introduced a forage biscuit, composed of blood and crushed oats and maize. The mixture was kneaded, cut up into cakes, and cooked in an oven or simply dried in a stove. When fresh these cakes had an agreeable odour, and it is reported that horses ate them with avidity. If such food could be introduced, from its high

nutritive standard it should, to a certain extent, advantageously take the place of ordinary forage, as the slaughter-houses could furnish a large supply of blood. But several conditions would have to be observed: the blood must be perfectly fresh and healthy, the biscuits should be well dried or baked, and they must be kept from damp. Otherwise, putrefaction will rapidly ensue.

During the investment of Metz by the Germans in 1870, attempts were made in the French Army to feed a certain number of horses on the flesh of those which had died or been killed. Veférinary-Surgeon Laguerrière, who made the experiments, reports that:—

1. The flesh of any animal can be used as food for horses.
2. The repugnance of horses for flesh is not nearly so great as is generally believed; for by proper preparation of the flesh, and by diminishing the ordinary ration, or even withholding it altogether at one or two feeding times, horses rapidly become accustomed to it.
3. Horses digest perfectly raw or cooked flesh, even more quickly and completely than they digest vegetable substances.
4. On flesh, horses thrive, fatten, and increase in vigour and energy, if it be given in addition to the daily ration, or even if it largely takes the place of the usual forage.
5. Raw flesh may be given to a certain number of horses, but it is preferable to boil it well; the water in which it has been boiled may be given them to drink.
6. Whether raw or boiled, the flesh should be finely cut up or hashed, then triturated and mixed with vegetable substances more or less alimentary, as leaves of trees, straw, hay, meal, grains, roots, &c., and, if possible, common salt added.
7. The flesh should be given in small quantities at first, gradually increasing the allowance. As much as $4\frac{1}{2}$ to $6\frac{1}{2}$ lbs. per diem have been given to each horse, flesh being then almost exclusively the daily food.
8. Certain horses readily took the mixture from the hand, others ate it from the nosebag, while others again preferred it from the ground or in the manger.
9. Several horses ate the morsels of raw flesh with only bran, meal, or grains sprinkled over them, or ate them when placed between leaves; afterwards these animals took them without any preparation whatever.
10. If the horses absolutely refuse this animal food, it is easy to overcome their repugnance by drying the cooked flesh, reducing it to a powder, and making it into a bread prepared with any vegetable substance.

More recently, and with a view to feeding army horses on active service with a highly nutritious food in small bulk, Scheurer-Kestner introduced a meat biscuit, in which the inferior flesh of cattle was utilized. When made with oatmeal, or barley- or maize-meal, to which one-third of flesh was added, the fermentation during baking dissolved the latter, and thus the vegetable ingredients were endowed with great reparative properties. This biscuit was reported as capable of being kept for several years without being damaged.

In England a similar biscuit has been tried with reported success by a Mr. Dünkelberg; and Spratt's dog biscuit, which contains a certain proportion of flesh, has been given to horses, which were said to eat it readily. It is stated that the Desert Arabs have for a long time been accustomed to give their horses a meat biscuit or bread on certain occasions, when great exertion is required from them. Not long ago an experiment was made with a kind of bread or biscuit composed of crushed oats and the refuse of flesh left from the preparation of Liebig's extract of meat; with this the horses of a cavalry regiment stationed at Deutz, Germany, were fed for some time, and the result was so satisfactory that the German Minister for War had a large quantity made at Mainz for a more extensive trial.

Bread or biscuit, composed entirely of vegetable matter, has been used for a long time in Sweden, Germany, Belgium, and Holland, and has often been tried in this country. Its use for army horses has frequently been put to a serious and extensive test. Owing to the difficulties attending the transport of forage in the field, the subject had for many years attracted the attention of military nations; but it was not until the Franco-German War of 1870-71 that attempts were made to decide the question of its utility. During that momentous event, it was found that, notwithstanding the good organization of the German Intendance, the supply of forage, even in such a country as France—so full of resources of every kind, and with such ready facilities for moving them from one part to another—was often interrupted and precarious, especially for the cavalry. This was mainly owing to the new fashion introduced of employing that arm in widely scattered and far advanced detachments, to screen the advance of the slower moving troops, to act as scouts, and to keep touch with the enemy, instead of marching in masses close to their supplies, which were carried by the transport.

And even after the campaign was terminated, the difficulty was still present to the troops left to occupy the French provinces. There was very little forage of any kind left in the zone of territory occupied by them, and it was not an easy task to transport it from the neighbouring provinces. It was indeed with the greatest effort that a permanent supply of hay was procured for the horses of the Headquarter Staff. The German Treasury, moreover, suffered great losses in oats, partly on account of constant damage and deterioration to which this kind of forage is liable in transport, and partly also on account of the very high price that had to be given for this grain when supplies had to be purchased for the Army.

So urgent did the matter appear to the military authorities, that the Commander-in-Chief of the army of occupation, Field-Marshal Manteuffel, and the Intendant of the Army, Herr Englehardt, were, in 1872, induced to appoint a Special Commission to make trials of various sorts of condensed forage, prepared by Herr Warnecke, in a large and most complete laboratory established by the German Government at Nancy, for the supply of preserved provisions for the troops. This compressed forage took the form of biscuits (*Pferde kuchen*), prepared with the meal of various grains in certain propor-

tions. There were three kinds of biscuit, designated as 1, 2, and 3. They were composed as follows:—

No. 1.		No. 2.	
	Per cent.		Per cent.
Oatmeal	60	Oatmeal	40
Rye-meal	30	Dextrinated pea-flour ...	40
Ground linseed	10	Ground linseed	20

No. 3.	
	Per cent.
Dextrinated pea-flour	20
Wheaten flour	20
Ground Indian corn	20
Rye-meal	20
Bread-waste	10
Ground linseed	10

A small proportion of salt was added.

The ration of biscuit varied, but it was estimated that about 4 lbs. were equivalent to 11 lbs. of oats, and that 6 lbs. per diem would enable a horse to undergo extraordinary fatigue, even if not supplemented by any other forage. Each biscuit was 4 inches in diameter, and the 4 lb. ration occupied a space that width, by 15 inches in length. They were either strung on a wire or carried in a canvas bag for conveyance on the saddle, and when given to the horse were broken in pieces, and eaten either dry or after being soaked in water.

The trials of these biscuits were begun by the cavalry of the German Army of occupation in 1872, on an extensive scale, and prolonged for ten months without interruption. One hundred horses were experimented upon on each occasion for ten days; fifty were fed with hay and oats as usual, the other fifty being fed solely on the biscuits, which had been manufactured a year. The result of these trials was reported as most satisfactory, inasmuch as the horses fed with the biscuits were, during the whole period, full of vigour and spirit; and while the trial lasted the average number of sick horses was 75 per cent. less than with those foraged in the usual way. A large Committee of Officers, among whom were the chief veterinary surgeons, decided in 1873 that these forage biscuits were excellent, and that they answered the requirements perfectly. Such distinguished chemists as Liebig and Fresenius also gave their opinion in favour of this concentrated forage, and asserted that it entirely fulfilled all necessary conditions.

Other trials were made with this biscuit, and in the end the results were deemed so satisfactory and so conclusive, that it was decided to build, with the remains of the war indemnity placed at the disposal of General Manteuffel, three factories for making them (and also preserved rations for the soldiers), at Mainz, Berlin, and Ratisbon, and on such a scale that in the event of war they could

manufacture many thousands of rations daily of this forage; at Mainz alone, 19,000 rations could be made per day.

The success of these experiments in the German Army induced the Russian military authorities to institute trials of forage biscuit in some of the Guards cavalry corps, and also in the cavalry of the Odessa and some other commands. Those in the Guards cavalry were carried out on the same principle as those in the German cavalry. A certain number of horses were selected, and for the first twenty-five days they received 4 lbs. biscuit and 10 lbs. hay. Then $\frac{3}{4}$ lb. biscuit was added, and 2 lbs. less hay allowed until the thirtieth day, when the horses received nothing but 6 lbs. biscuit per diem for several days. At the termination of this trial, the vigour and general condition of the animals was found to be equal to that of the horses fed on the ordinary ration. The experiments in the other corps were equally satisfactory, and the consequence was that the Russian Government followed the example of the German Government, and in 1877 established a biscuit factory at St. Petersburg, at Moscow, and at Ekaterinoslaw. That at St. Petersburg can turn out nearly two tons of biscuit a day. The composition of the Russian biscuit was, in 1879, as follows:—

		Per cent.
Oatmeal	from	35 to 40
Rye-meal	"	25 " 30
Pea-meal	"	15 " 20
Linseed-meal	"	9 " 10
Common salt	"	1½ " —

During the Russo-Turkish War, when no fewer than 20,000,000 rations of this biscuit were consumed in the Russian Army, its composition was:—

		Per cent.
Oatmeal	from	30 to 40
Pea-meal	"	30 " 50
Barley-meal	"	10 " 20
Linseed-meal	"	15 " 20
Common salt	"	1 " 5

The factory at St. Petersburg, during the war, furnished 20,000 rations daily, and had at the end of September, 1887, despatched more than 500,000 rations for the use of the active army.

Each biscuit was $3\frac{1}{2}$ inches in diameter and $\frac{3}{4}$ inch thick. They were strung on a wire or string, which passed through a hole in their middle, and by it were attached to the saddle. During the passage of the Balkans and the subsequent advance into the neighbourhood of Constantinople, all the horses of the cavalry and artillery of the Russian Guard were fed entirely upon the biscuit for twenty-six days, and are reported to have kept in excellent condition all the time, although hard worked and exposed to inclement weather. The only disadvantage found in their use was that the soldiers stole them to eat. The Germans prevented this by adding 5 per cent. lupine seed. A horse could carry two to five days' rations, and the biscuits

were given either wet or dry, but always broken; the horses were fed on them three times a-day, at 7 A.M., noon, and at 7 P.M.

The German biscuit was tried in the Austrian Army, but the result was unfavourable.

France has, on several occasions, made trials of forage biscuits, notably those proposed by Army Veterinary Surgeon Naudin and M. Barthe. These biscuits were tried in France in 1878, and with the cavalry in Tunisia more recently; but the results do not appear to have been sufficiently satisfactory to induce the French Government to adopt this kind of forage.

The Italian Government, in 1878, instituted experiments at Salerno, with a similar biscuit introduced by Colonel Ravelli, the experiments being carried out on cavalry horses, sixty-four in number, for a month. Thirty-two of these were fed on the biscuit only, sixteen on it and hay, and sixteen on it and oats. The first received nearly 11 lbs. of biscuit per diem, the second $3\frac{1}{4}$ lbs., and the third 3 lbs. 2 ozs. The last two consumed, in addition, the first, 11 lbs. of hay, their usual ration; the other 7 lbs., their oat ration. In the early days of the experiment, the precaution was taken to soften the biscuits in water, so that they might be more easily eaten by the horses. Some did not take to them well, and two or three of the Maremma breed absolutely refused them. In the third, fourth, and fifth days, some of the horses fed on the damped biscuits only, showed signs of gastric disturbance; when fed on dry biscuits they all recovered. Those on the mixed food, with two or three exceptions, did not show any signs of indigestion during the month, and preserved their vigour; though they looked rather empty, as did the others. The conclusion was favourable to the use of biscuits, and it was recommended that in camp and during war the ration should be increased to 13·2 lbs., and also that they should be given to the horses during peace, in order to accustom them to this food.

The great importance of the subject of quality and transport of forage has not escaped the attention of our own Government, but, on the contrary, has received much notice from it since the Russian War of 1854-55. For the war in North China in 1860, and also for that in New Zealand in 1863, and in Abyssinia in 1867, compressed hay mixed with oats was sent as forage, and was reported upon as a great improvement on the ordinary forage, though objectionable in some respects; for instance, waste of grain in issuing the forage, and the drawback in having the hay and oats together when only one of them was wanted; as well as the defect, that one could not be increased without also increasing the other.

The experiments on the Continent, and particularly the success attending those in the German and Russian Armies, appear to have led to an earnest desire to perfect our system of foraging horses on active service; and a Committee was therefore appointed in 1878, to make inquiries into the various kinds of compressed forage used in foreign armies, or manufactured in this country, with a view to the best being adopted for the British Service. Such forage was to fulfil the requirements of field operations, in being—

1. Portable, both for carriage by land transport and on board ship.
2. Possessed of good keeping qualities.
3. Retaining the maximum of nutritive properties after the process of compressing has been carried out.
4. Being of a nature admitting of horses changing to or from their ordinary food, without avoidable risk.

Having been appointed a member of the Committee, which continued its investigations for three years, I can testify to the anxious care with which its investigations were conducted, and the caution exercised in arriving at conclusions. A large number of samples of forage of different kinds were submitted and examined, and among them various sorts of horse biscuits and compressed hay and grain. Of the biscuits, Barthe's, composed of oatmeal, pea-flour, rye-flour, and linseed meal, and which had been tried in the French Army and unfavourably reported upon, was not accepted for trial; but Spratt's biscuit, made up of wheat, oats, beans, maize, dates, and other ingredients, and the German Army biscuit (known as Warnecke's), the composition of which I have already given, were experimented with. Spratt's biscuit was tried in 1878 on horses of the Army Service Corps and 16th Lancers, and found unsuitable.

In view of the favourable reports published in Germany and Russia, the German biscuit was submitted to rather prolonged and extensive trials at Aldershot, Woolwich, and London, in 1879, on cavalry, horse artillery, and Army Service Corps horses, but the results were generally unsatisfactory. Experiments also made with a biscuit supplied by Colonel Trench (20th Hussars) were no more successful, and the Committee came to the conclusion that "cooked food in the form of biscuits is unsuitable for the horse's ration," because (1) of its too rapid assimilation, and, when given alone, of its insufficient bulk; (2) horses do not take it readily—some horses persistently refused to eat it during the seven days' trial; (3) it might find its way into the camp kettle; (4) its great expense, 18*l.* to 28*l.* per ton; (5) difficulty in carrying it; (6) tendency to produce internal derangement.

3rd. Compressed Forage.

The opinion of the Committee was well founded, and the first and last reasons given for rejecting this biscuit forage were quite sufficient, in themselves, to justify their decision. Horses will not perform hard work on cooked food, it would appear, and their ration must possess a certain bulk. Their anatomy and physiology are such that though they only eat a small quantity at a time in a natural state, yet they should be fed frequently, and their food should produce such a feeling of repletion by its volume as to satisfy the appetite.

The essence of a large ration might be given in a very minute quantity, yet hunger would not be appeased, and the animal would lose condition. Therefore it is not so much to concentration of the nutritive

properties of forage for army purposes that we should look, as to compression of the ordinary forage, and in such a way as to make it as portable and conservable as possible. Panification of the food will not answer, and especially for horses exposed to weather, and which have to undergo severe fatigue. Compression, after suitable preparation of the ordinary forage, was then decided upon by the Committee, for experiment. What was known as "Davis' Compressed Forage," consisting of bales of hay and oats mixed, had been already tried in North China, Abyssinia, New Zealand, and South Africa; its only advantage was reduction in bulk, a ton measuring from 55 to 70 cubic feet. Its disadvantages I have alluded to. It was sought to effect a still further reduction in bulk by having the grain and hay compressed separately in smaller quantities, and in a form better adapted for distribution and digestion. The great improvement in compressing machinery, and in the art of compressing, which had taken place, rendered this an easy matter.

A "grain cake," as it was termed, was introduced by Captain (now Lieutenant-Colonel) Graves, 20th Hussars, and this appeared to be the most desirable form in which the grain food should be presented. But the Graves' cake was composed of crushed maize, oats, beans, and so many other ingredients of uncertain nutritive value, and so different to the ordinary forage, that the Committee decided to reduce the number of constituents, and to have a compressed grain forage of simpler and more reliable composition. A cake was accordingly prepared, per ration, as follows:—

Oats, crushed	7.25
Beans „	1.00
Linseed „	0.25
Hay, chopped	0.50

This grain cake was intended to replace the ordinary oat ration; and from its composition, and the fact of the grain being crushed, it was thought that 9 lbs. of it would be equivalent to 12 lbs. of uncrushed oats. Long-continued, extensive, and thorough experiments were made with it in the cavalry, artillery, and Army Service Corps, in stables and on picket lines, and with the most satisfactory results. After being fed for a month on a ration of 9 lbs. of the cake and 8 lbs. of hay per diem, the horses looked well, though in some instances undergoing severe work. It was considered, however, that, for the heavier horses especially, the allowance was rather small, and particularly in camp. The grain appeared to be thoroughly masticated and easily digested—an important point when considering the condition of tired or old horses, or when time is scanty. With regard to diminution of bulk, this was also found to be fully achieved. One ton of the cake occupies 38 to 40 cubic feet, while a ton of oats requires 80 to 100 cubic feet; the reduction which can be effected in the ration (say 1 lb. per diem) is also an important feature in connection with transport. The composition of the cake is also such as

should meet all the requirements of a typical grain food for hard-working horses, and is a great improvement upon the oat ration.

For facility of transport and issue, the crushed grain was made into rectangular cakes weighing 18 lbs. each—a day's ration for two horses; four or five of these being made up into a small bale, securely bound.

The keeping qualities of the cake were found to be good; it was sent to different parts of the world, kept there for a considerable time, then returned to England and examined, when it was found to have undergone little, if any, change.

In the words of the Committee's Report: "Horses thrive on it, take to it readily, and change to and from it, with reference to their ordinary forage, without detriment to health or condition."

In their inquiry, the Committee were not unmindful of that other essential portion of horse's food—the hay. The difficulties attending its provision, storage, and transport in the field; its inflammability, and its great tendency to become mouldy and otherwise damaged when exposed to wet and other influences; and the great loss sustained in issuing it and feeding it on the ground to horses; induced them to try chopped hay compressed into dense cakes, like those of grain, and of the same weight. The result was again perfectly satisfactory. When hay is cut into short lengths—about $\frac{3}{4}$ of an inch—and pressed into cakes of this description, it forms not only a most convenient and very portable article of forage, so far as transport and issue are concerned, but its keeping qualities are greatly increased, while it is almost unflammable, and is nearly waterproof. The saving in cubic space alone is something extraordinary; for while one ton of the ordinary compressed hay in iron bands occupies 135 cubic feet, one ton of the hay cake measures only 45 cubic feet. It was estimated—and the estimate was found, on experiment, to be correct—that 9 lbs. of hay cake (two rations in each cake) were equal to 12 lbs. of long hay; so that the amount of cubic space required for one horse's ration of the latter would contain four rations of hay cake. When this chopped hay is given to horses in suitable nose-bags, there is no waste whatever; very different is it with long hay thrown on the ground before the horses in wet or windy weather. Mastication, too, is much easier, and there is not the risk of horses swallowing soil, gravel, and other injurious matters as when they are fed on the ground. On the line of march, also, the immense inconvenience of carrying voluminous hay-nets suspended from the saddle is avoided.

By having the hay and grain separate, several important objects are attained. The horses can have a larger or smaller allowance of each; if hay or grass can be procured within the zone of operations, then the hay cake need not be given. As the result of experiments at Aldershot, there is reason to believe that a force might be detached on a reconnaissance for four days, each trooper carrying four days' rations of grain cake (36 lbs.) in the nose-bag, supplementing this with whatever hay, grass, or straw might be obtained on the line of march; while an additional two days' supply might easily be carried

in the squadron carts of regiments, and on the ammunition wagons of the artillery.

When horses are fed with the hay and grain cake, these should be mixed in each feed, as it saves time and is more economical. To do this, however, a larger nose-bag is required; and one was devised by the Committee which answers the purpose admirably. As is well known, the present nose-bag is of very little use. It is so small as only to hold one feed of oats; is soon worn out by the ground (during the Zulu campaign the average wear of the nose-bags was a fortnight); owing to the horse tossing up his head to get the oats in his mouth, much is wasted; and the weight is entirely supported by the horse's head. The improved bag is sufficiently large to hold a full feed of grain and hay cake, or three days' rations of the former. When worn by the horse it is horizontal, instead of vertical as with the present bag, and the weight is borne by the head and body. The bag never comes in contact with the ground, and therefore the amount of wear is so much diminished that it should last for a very long time. The comfort of the horse when feeding is very much increased—as he eats from the upper side of it; there is no fouling by the breath; nor is there any waste of forage, while the animal can breathe quite freely. By means of the cords attached to each bottom corner of the bag, and which serve to suspend it to the body, when it is filled with grain cake to be carried on short expeditions, it can be lashed to the saddle. This bag was also tried in the Aldershot experiments of 1880, and reported on most favourably by the different regiments.

I have alluded to the use of bran on shipboard and in the field, and to the trouble and risk there is usually experienced in carrying and preserving it. When compressed into cakes, like the grain and hay, the trouble and risk are at once got rid of. It is easily carried, and if not exposed to much damp will keep for a very long time. One of the cakes of bran now before you, weighing 25 lbs. and containing two bushels, has been compressed for more than twelve months. I may mention that one ton of bran in sacks occupies 150 cubic feet, but when compressed into cakes it requires only 40 cubic feet, being a saving of 110 cubic feet per ton.

In every way this compressed forage has answered well, and has met all the requirements of an army forage. It is very portable, keeps well, is easy of issue, does not waste if properly given, is readily masticated and easily digested, contains the nutriment in a sufficiently concentrated form, while it possesses the necessary amount of bulk to prevent horses feeling dissatisfied when they are fed; it is not very combustible; and it consists of the ordinary food of our horses.

As I have said, these cakes are made up into small bales, containing four or five cakes, covered with canvas and bound by light iron bands, and are well adapted for either wagon or pack-saddle carriage. They appear to be damp-proof, and are certainly bullet-proof.

In addition to the extensive trials made of this forage at home, it has undergone satisfactory tests in Egypt and the Soudan, and also in India. In India the forage biscuit was tried in 1881, and failed;

whereas the hay and grain cakes answered well, forming an excellent forage, and their keeping qualities were found to be good—a year's test having been imposed. I understand that the Indian Government contemplates preparing large quantities to be kept in reserve, and it is reported that the French Government look with favour upon this kind of forage, and are about to lay in large quantities of it. Considering this the best kind of forage for military purposes—that is, for field service, it may be hoped that there are means in this country by which it could be readily supplied when needed. The machinery to prepare it cannot be extemporized in a few days, and if it is to be supplied by private firms, some demand for it must exist all the year round, for the reason that there would be no demand for it except for army purposes. The system of securing supplies of this kind for the Army rather militates against the adoption of the compressed forage, as the tendency is towards extreme economy during peace, and extravagant expenditure in war-time.

In order to accustom the Commissariat Corps and the horses to this war forage, and manner of using it, as well as to encourage manufacturers of it, a certain quantity should be used annually—say, not less than 1,000 tons—and a day's ration given to every troop horse once a fortnight, or even once a month; a stock to the same amount being always kept on hand for emergencies. I am strongly of opinion that everything done with, and for, men and horses during peace, should be in the nature of a rehearsal for war; so that there should be no confusion, dislocation, nor defection when troops have to take the field.

Before a manufacturer of this forage can turn out, say, from one to two hundred tons a week, he must spend a large amount of money in laying down machinery, and if this be not regularly employed, there is not only the loss of interest on the capital, but the machinery itself soon becomes damaged. Therefore, unless we are to find ourselves in an unpleasant fix with regard to forage should a war occur, we should not only have a good reserve supply on hand, in order to avoid having to pay a most exorbitant price if an emergency arises, but there should also be provision made for a constant supply to meet all demands of active service.

I should have liked to have referred at length to the supply of forage to army horses during peace, but time will not admit of my doing more than briefly noticing it. Those who, like myself, have given the subject some attention, must have come to the conclusion that the present system is unsatisfactory in several respects, and that probably much improvement could be effected, and a large money saving made, if army horses were foraged on the principle in operation in large civilian establishments of horses, such as the omnibus and tramway companies. Take, for instance, the London General Omnibus Company, which at two forage depôts prepares and delivers food for more than 10,000 horses. The objection which would probably be raised to such a system is, that it would be impossible to prepare forage in London and deliver it at a distant station, say, Aldershot, as cheaply as it would be to purchase unprepared

forage at that station. This objection might be met, however, by pointing out that such places as London, Liverpool, and Hull are the great centres for forage of all kinds, and its price everywhere else is governed by its price at these markets. For example, supposing a quarter of oats in London costs 15s., and the railway carriage to Aldershot is 1s., the market price at that place would be at least 16s. 6d. or 17s. per quarter, the extra amount being the merchant or contractor's profit.

Then again, buying in large quantities, as the Government would do, the supplies would be procured direct from the grain ships, and thus the factor's and merchant's profits would be saved.

The same argument would apply to the procuring of hay. The growers would be only too pleased to submit their samples, and, if approved, sell direct to Government as a consumer, at a price as low, if not lower, than to the hay dealers in whose hands they must place themselves, often not knowing how or when they will receive payment.

One other objection may possibly be raised, viz., that it would be detrimental to the English farmer if the Government were to purchase supplies in, say, the London market. But a simple answer to this would be, that under the present system Government buys from the contractor, who, in his turn, purchases from the London merchants. Foreign oats (the present contract prices are so low that none but the cheapest Russian oats can be purchased), or even those of home growth, the Government could buy direct, as the price suited. The advantage to the public and the horses would, I am certain, be very great, and we should get rid of bad forage, speculation, light weight, and all the other evils which cause so much trouble and dissatisfaction. As regards delivery of forage from the railways to the barracks, there should be no difficulty about this, as cavalry, artillery, and infantry have their horses and wagons.

I regret that time will not permit me to refer to the quantity of forage allowed to army horses,¹ a subject of much importance, and which is well worthy of discussion; but I must forbear, and, in conclusion, ask you to aid in throwing as much light as possible on the different points I have been, by your kindness, allowed to touch upon in this paper, in order that our Army may benefit to the largest extent from your experience and observation.

Colonel E. A. WOOD: We are very much indebted, as every Officer in the Army must be, especially those in the mounted branches, for the excellent lecture we have heard from Dr. Fleming. I regret, however, that he did not bring forward the results of some experiments made at Aldershot some few months ago, in 1887. In these experiments several kinds of compressed forage were tried, and not only tried one against the other, but they were tried against an increased allowance of 2 lbs. extra corn. I think those experiments should have been mentioned. I cannot say for certain whether the forage that Dr. Fleming has been describing—the oat-cake and the hay-cake—was tried there, but fancy that it was, anyhow there was forage of that description, and I imagine every kind of forage best known to the authorities was tried. The one which then answered decidedly best before all others was the desiccated forage prepared by Mr. Goode. We had not much opportunity of testing that with regard to its advantage over the other forages, until we removed all the bedding

¹ This will form the subject of a further lecture by Dr. Fleming.—ED.

from the horses, and there we found a tremendous improvement. This Goode's forage, a kind of compressed forage, left all the others far behind, and that I believe is what the Committee reported as being the best in preference to all others that were tried. I should like to have had some allusion made to that. Perhaps Dr. Fleming would be aware of it, and there may be some other Officers present who were at Aldershot when it was tried. I do not think we can be sufficiently grateful to Dr. Fleming for having brought these matters forward, but I am sure at present we are totally deficient in the large quantity of forage that we should require if we had to send an army corps abroad.

Colonel R. S. LIDDELL: Dr. Fleming, in speaking about the compressed or desiccated food, did not mention one point that occurred to me in carrying out those experiments at Aldershot that Colonel Wood has alluded to, and it would be very valuable if he would, later on, say something on that subject. That is with regard to one slight objection to compressed food. Of course we must have compressed food in our campaigns, it is certainly necessary in some shape or other, and all the armies are providing themselves with it, but the one difficulty we found at Aldershot was, it was impossible to know whether it was made of good material or bad. In examining ordinary forage as usually delivered, Commissariat Officers, Officers of regiments, and so forth, could discover at a glance whether the hay or the oats were good, but when forage is broken up and made into cakes there is very great difficulty. Of course, during these experiments at Aldershot, the people presenting these different kinds of food for test naturally send the very best. We had nothing to find fault with and the experiments were successful; but supposing a compressed food once adopted, we then have to consider how are we to know whether the ingredients are really of the best quality. The only way to get over it is, as far as I can see, that the Government should take the matter up in the same way as they did in the Navy where the biscuits for the sailors are made in the victualling yards. Why should we not have Government factories for forage? It is no use asking the Government to do anything which costs money, but I think Dr. Fleming might prove to the Government whether in the long run it would not be economy if forage was bought at the various large markets and then compressed in their own factories. I am sure that every regimental Officer, every Officer of a mounted branch will thank Dr. Fleming for his suggestions with regard to obtaining forage for the Army by any other means than those at present adopted, viz., from contractors. We know what difficulty we have in detecting the tricks that contractors resort to, and I am sure it would be a great advantage to Officers to have some such Government establishments as I have mentioned.

Colonel E. G. GRAVES (20th Hussars): I feel a certain amount of diffidence in standing up to speak on this subject as a layman, a subject introduced so well and so exhaustively discussed by the Principal Veterinary Surgeon of the Army, and I must say I think we are bound as a meeting to congratulate the Council of the Institution for having put this matter in the lecturer's hands. From his official position in the Army, and being also President of the Veterinary College, and largely responsible for one of our principal veterinary journals, he is in a position officially to obtain information as to what is going on abroad and in other armies, and is therefore able to base what he states in his lecture upon facts in a way that those of us who have no such official position would hardly be able to do. I say I think the Council is to be congratulated upon having put the subject into his hands on that account. I only venture any remarks here to-day, Sir, on the ground that I had, I may say, the good fortune to originate the principle of compression and heat in reference to the products which you have before you on the table. I am not the inventor of oats any more than of beans, or any combination of the commodities that are thus compressed, but before I submitted my invention to the authorities, I believe there was no attempt to produce a distinctly "corn-cake" of that particular dimension and character under those particular circumstances. Now, one thing I think that ought to be kept in mind clearly is this, that the question has been really a contest between "*concentration*" *per se* and "*compression*." All the experiments carried out in England showed, for the reasons given by the lecturer, that "*concentration*" was an utter failure. I believe the producers of those biscuits made on the principle of concentration, of which you have one in that small case, in attempting to apply them

for use amongst horses, failed lamentably in their anatomical knowledge. They seemed to think that the horse's digestion was carried out in the same way as any other animal's digestion, and that concentrated food would suit him as it would in many other animal cases, but it is not the fact. The horse's stomach happens to be in proportion to his bulk, his total mass, the smallest vessel of the kind known, I believe, in comparative anatomy. Again, the danger in using concentrated food of that sort lies in this point, that that particular biscuit and similar productions, when comminuted in the mouth and attacked by the gastric juice in the stomach are reduced in a short time by liquefaction to what would be practically the dimensions and consistence of a basin of pea soup. The result would be on service, that if a horse was watered irregularly and at irregular moments—(I am speaking now under the correction of the learned lecturer)—supposing that biscuit had been reduced to this state in his stomach and he was then watered, the whole contents of the stomach would be carried through the duodenum into the cæcum, the water stomach of the horse, and the result would be that the horse's main stomach would be left practically empty. Then, again, in the experiments carried out in concentration, we know in one instance in the year 1879, at Aldershot, that one horse actually lost 113 lbs. in weight under a month, and I was informed by one of the Officers superintending the experiments that he positively had to be carried back from the picket lines to his stable. During all the time that these experiments in concentration abroad and at home were being carried on, I was trying to work out in my own mind a system of "compression," and I laid down particularly these lines to go upon. I wanted to produce, if I could, a forage which should be as nearly as possible the horse's natural food; I then wanted to produce something which would keep properly, and then I sought for portability. I think the reports I have received of the forage thus produced, from India, from Zululand, and South Africa generally, from Bermuda, from Aldershot, and the Report of the War Office Forage Committee appointed in 1878, show clearly that all these special characteristics are fulfilled in this particular cake. I do not claim for that anything more than might be fulfilled by these samples of excellent forage which I see here, the product of another firm. With regard to its being a natural food and also to reducing it in bulk, the question of heat came in. I felt that the horse could not, as the lecturer has already said, carry on for any considerable time on a cooked or concentrated food, therefore the question of heat was a serious one, and after a number of experiments we were able, by drawing the line at a certain point, which I am not at liberty to state, to get a consistency through heat, under compression of two tons to the square inch, which enabled us to produce a cake which would remain in that particular form till broken. Then as to its keeping qualities. The one great point to be observed is the expulsion and exclusion of the fixed air. Practically these forages on the table are hermetically sealed, hence they are able to stand the test of time. Now I must just shortly tell you what the tests were. In India they were kept under cover and in the open for twelve months, and were found to be sweet and good. That particular specimen in the glass case has been in the museum of this Institution now something like nine years. I have not opened it, but I should like to see whether it is sweet or not now, and I should like to see it broken up. During the Egyptian Campaign I was requested to go to base stores at Suakin to examine some of my "corn-cake" to be issued to the cavalry brigade to which I belonged; I went down and found that the forage had been in the country from 1882 to 1885. I said at once that I hardly thought it was a fair experiment, as it had been knocking about up and down the Nile and so on, but I said perhaps the best thing would be to issue it and see if the horses did well on it. It was issued, and the whole brigade was fed upon it till the supply was exhausted, and there was no deterioration beyond this, that the outside of sundry bales had got damp and therefore mildewed, but as soon as the mildew had been scraped off it was found that the inner portions of the cake were perfectly good and sweet. So much for the keeping power. Another interesting experiment was carried out to show another value of it. You see the hay-cake, that hay-cake is really the invention of Sir Penrose Julian, and it was used years ago in the China and Crimean Wars. It was also used in this way. In the centre of the hay-cake was sometimes placed a large bulk of oats, and the hay was really the vehicle which carried the oats. But the matter of distribution showed the difficulty in using it,

for when broken up one horse got a great deal too much oats and too little hay, another too much hay and too little oats, so it was decided to experiment upon a cake made wholly of hay, and with the result that you have heard. That particular hay-cake was put to the test in a very severe way. Four blocks were suspended and sunk in the water in one of the docks at Liverpool. After the first week No. 1 was taken up; it was found of course to be wet all round, but the penetration of the water was an average of $1\frac{1}{4}$ inches. The second, third, and fourth weeks showed in the second, third, and fourth bales an increased penetration of water, but in no case had the water penetrated to the heart of the cake, they showed that not only was it very valuable from that point of view, but that it has great resisting power and I think floating power. There is yet another point, it is almost non-inflammable. If you try and burn one of these blocks you will find that instead of taking fire they will smoulder very slowly, so that if a ship is filled with 600 tons of this stuff the whole ship may be burned to the water's edge and all the cargo will simply tumble into the water in a state of char, but not burnt. Then, lastly, as to portability, the question was not so much to compress as much as possible, because with the machinery that manufacturers have in use you can compress to almost any extent, you can compress a cake to such an extent that it would require a hatchet to break it. That is not required on service, you want something compressed to such a degree that while it will stand the knocking about of transport on mules, in carts, in a ship's hold, on railway trucks, being transferred from ships to barges, into boats, crossing surf and all that kind of thing, you want sufficient compression to maintain it in its integrity until that is over, but not so much compression as to make it a matter of difficulty to the soldier to break it up. If you take that cake and put it on the ground cornerwise and lean upon it you ought under ordinary circumstances, and if the manufacture has been carried out correctly, to be able with just an ordinary push to break the whole thing up. Herein is the great value of the invention from the feeding and carrying points of view. The compression must be carried to this extent and this only, and here the science of the thing comes in. It must be compressed only so far that on being broken up it will resume its *normal bulk*, so that practically it comes to this, that you give the horse his natural uncooked food and that which fills him, as the heat applied does not alter the nutritive value or change the characteristics of the ingredients. These are the chief points to be observed in compression, and the application of heat to this product. In some cases if you give men too hard work in breaking it up after a hard day's march they are very likely to give it to their horses in lumps; that would be utterly wrong, it makes it more difficult for the horse to chew, and when in the mouth, the horse getting a lump of it and chewing, it would there resume its normal bulk, and he would waste half of it because it would fall out of his mouth. I have seen this in actual experiment, whereas if you make it so by compression up to a certain point it will break thoroughly, you give the horse really his natural food. It is not a matter of discussion as to which cake has the most nutritive qualities. You can make a cake of any combination of ingredients, treat it with turmeric, or Thorley's food, or some other highly-spiced condiment which I do not believe in for the simple reason that at some time or other on service the supply would fail and the horse would have to go back to the natural food available on the spot, with this result, that just as in the human subject, the man or woman who eats nothing but highly-spiced things, naturally turns away from plain food, so it would be and even more so with the horse. There is just one point I should like to touch upon before sitting down, and that is, I should like to emphasize very strongly what the learned lecturer said with reference to what we do in time of peace being a rehearsal for war. I am quite clear in my own mind that it is not the time to put a spade into the infantry soldier's hand when he is going to war, he must learn to use it beforehand, to make intrenchments. I am equally sure it is not the time to train mounted infantry to ride just as they land on the coast where they are to carry out what we call the operations of war. So, equally, I am convinced that if you are going to feed a horse, a delicate and fastidious feeder as a rule, upon such things as these, it is not the time to begin to feed him on them when he is put under climatic conditions and circumstances which he has not been used to. Therefore, I think what the lecturer has said, although I am quite sure he has asked for too much—I am rather inclined to take the view if you want anything from the War Office Treasury Department,

as a rule, you should ask for a little at a time, because, blessed is the man that expects little for he will not be disappointed—the lecturer has asked too much, he wants every horse to be fed upon this stuff, but I would respectfully suggest for the consideration of the authorities that these foods which have been presented to you to-day should be issued from time to time during peace to the whole of the horses belonging to the first line, and, if there is any over, to the horses that would replace them in that line owing to the circumstances of war. I must say I have very much enjoyed the able way in which the lecturer has dealt with the subject, and I am sure the Council of the Institution will find his paper a very valuable addition to their journal.

Mr. C. P. GOODE: I should like to make a few remarks on this very important subject, as I have always taken great interest in the question of forage for Army purposes. As some of the samples which are before you are by the firm of which I am a member, I should like to add a few words to what has been said, as my experience has, I think I may say, been considerable. I have not only not confined my work to England, but have also taken the forage to Egypt, to India, and to France. The result of this experience I should like to give you. First, let me say that it is useless to attempt to send forage from England to the places I have mentioned, for the reason that cost of freight renders the forage too expensive. It is, however, necessary at first to incur the extra expense in order to ascertain whether this class of compressed forage is suitable to the different countries, and, if so, whether the process could be carried on in these countries, using materials natural to the soil. I am glad to be able to say that the Governments I above referred to gave my forage a trial, and the result being in every way satisfactory, it is, I believe, only a matter of time before it will become largely used. As regards India, my firm have already started large works at Amritsar in the Punjab, where we are now pressing daily very considerable quantities of fodder for the horses of the Indian Army stationed at Quetta. Although we have experienced many difficulties, the outlook is highly favourable, and each mail brings us encouraging information. I should add, the Viceroy's Government treated us very liberally, and are now working this business in conjunction with my firm. As Dr. Fleming said, the original idea was to produce compressed forage complete, composed of grain and chopped hay mixed together. Experience here and in India has proved that this class of forage is unsuitable, for the reason that the ration of the grain or of hay cannot be varied if required, and, as all animals do not require the same ration, it has now been decided in future that compressed forage should consist of two kinds, viz., (1) compressed grain, and (2) compressed chopped hay, to be covered in a different coloured wrapper to prevent confusion. The sample of grain-cakes you see on the table are composed of (1) crushed oats and crushed beans, (2) crushed oats and desiccated food, (3) compressed chopped hay, (4) compressed lucerne or alfalfa of American growth. Although they would appear at first sight too solid for use, they are very easily broken up. You will probably ask, What is desiccated food? It is a food which I invented some three years ago, and is composed to a large extent of Indian gram, which, as most of you are doubtless aware, is a most nutritious food, and one which entirely takes the place of oats in India for feeding horses. At the same time, it cannot be used in this country in its natural state. I therefore grind it into a fine meal, which, with a little salt, is semi-cooked. The result is that I have a most excellent substitute for oats, and one which can be supplied at a cheap rate. The food was tried at Aldershot in 1886 in the place of oats. It was also tried in the same year, as you here see it, in compressed forage. In both instances the experiments were a complete success, and I hope before long the War Office will decide to use it, either alone or in conjunction with oats. You will see in front of you three samples of lucerne, or alfalfa, as it is called in South America. I should like to say a few words on this point. You will know that the hay crop in England last year was a failure, and that the price of good old hay, fit for hunters, is between 6*l.* and 7*l.* per ton. Now, should we have another wet season this year, I think that you agree with me that our supply of hay would be very limited, in which case, prices would soon go up enormously, when not only would private individuals suffer, but especially the Army, whose requirements must be met in some way or another. France and Holland, although they supply us to a limited extent, only send us hay of very

inferior quality. My idea is, that this lucerne, or alfalfa, might prove to be a most valuable substitute for the English hay. I have lately had a small shipment of lucerne from Buenos Ayres. This I have been experimenting with, and, so far as I have gone, I am certainly of opinion that it is a most valuable fodder for horses, and I shall be much pleased if any gentleman here can tell me whether he knows of any ill effects caused by using it. The sample before you will show how close it can be pressed, and therefore how portable. I understand from a gentleman who has large estates in the vicinity of Monte Video that the supply is simply unlimited, and that thousands of tons are burnt every year, for the reason that there is no use for it. I have already proved that it can be easily pressed, and, as regards the cost, it is not expensive. I consider that it could be sold in large quantities at the reasonable price of 4*l.* per ton. It appears to me that, as regards forage, the War Department is absolutely unprepared for any emergency, only a small reserve being kept at Woolwich Dockyard. The present system of obtaining supplies seems to me unsatisfactory, for the reason that when Government requires a quantity of hay they send tender forms to the large hay salesmen in London, with the result that it is known by everyone that Government are buying, suspicions are aroused, and prices go up immediately. This can be avoided and a considerable saving made if, instead of sending out these tender forms, they would go to a man with a knowledge of the subject, and say: "We want, say, 2,000 tons of hay, can you manage it for us at a moderate price?" If this remark had been made to me, I should have replied: "Give me time and I can do it." My mode of doing it would be this. I should go quietly to work among the farmers and hay growers, submit a sample from the different stacks, and, if Government approved, buy the hay. The same argument would apply to compressed forage, but this business is more of a monopoly. At the present time there is only one manufacturer in this country, with the exception of myself, and I can say this, that if the War Department would only give us sufficient regular orders in peace-time to keep our machinery in order, we should always be willing to work night and day for them in war-time without charging extra, so long as the materials we used did not increase in value. I was very pleased a short time ago to receive a small order for 300 tons of compressed grain and hay cake, but the conditions were very strong, viz., "that we must guarantee the fodder to keep fresh and fit for use for twelve months." I am quite prepared to guarantee the forage supplied by my firm to keep fresh for twelve months; at the same time, I do hope that the Government will consider the question from our point of view, for it must not be forgotten that plant for compressing forage costs many thousands of pounds, and we cannot afford to have this machinery lying idle for several years, and then suddenly receive an order to be immediately executed. The result, I need hardly say, is unsatisfactory, as the machinery has to be continually repaired until the contract is executed, with the possibility that it is again to lie idle for several years. I very much appreciate the explicit way in which Dr. Fleming has dealt with this subject, and I trust it may lead to a satisfactory solution of the question before us.

Mr. PAUL KRELL: Mr. Chairman, ladies, and gentlemen, I am not a military man, but I am a farmer, and I am a farmer in South America, where we grow this lucerne, and it grows there so readily and so abundantly that really and truly we should not require more than twelve months' notice in order to supply the whole world with all the fodder that might be wanted, it grows there in such abundance. It is sown with the wheat, which protects it while it is springing up until the wheat is reaped, and there is then a field of lucerne, which is cut four or five times every summer, giving an abundant crop. We have it there, cutting it with a comferr mower generally three or four times a year, and once or twice with a scythe. It must be cut, because if it is not fed off, which is very difficult to do in an abundant year, in a wet season for instance, the lucerne will deteriorate and will die out in time. I myself have had to burn down as much as 1,000 acres sometimes in one winter when it has been dried up by the frost, merely to get rid of it, and by doing so you actually strengthen the roots and it comes up stronger than ever. I have had about 500 acres of it for more than twenty years; it is really and truly everlasting. To my certain knowledge for twenty years hay has been made and cut and compressed like they press the wool out there in common wool presses and exported, and the Brazils,

Rio de Janeiro, Bahia, Pernambuco are all supplied with this hay and use nothing else. I know nothing about artificial food, although we have a great many horses. Still there is any amount of hay to be had there, sufficient as I say to supply the whole world. There is another thing I want to point out, it is a wonderful country for growing oats. I was the first to sow an oat there. They have a wild black oat, but I took out three sorts of oats, the Scotch, the Waterloo, and the Dutch, which really gave abundant, wonderful crops, but I could not sell a pound of it; nobody would buy it. All the horses there were then fed on barley or maize, and I did not know what in the world to do with it; at last Providence stepped in, my stack-yard was accidentally set on fire and my stacks of oats burnt.

The CHAIRMAN: At what price could you ship the lucerne to England?

Mr. KRELL: That is very difficult to say. Mr. Goode said just now that the freight was 10s. a ton. I should say it would be 1l. a ton. It all depends on whether freights were high or low.

The CHAIRMAN: You are only speaking of freight, but at what price could you ship the lucerne.

Mr. KRELL: We could deliver the lucerne at 3l. a ton, and make 1l. profit without any difficulty.

The CHAIRMAN: I can corroborate from experience what Mr. Krell has said about the lucerne. There is very little grown in England, but when I pass my summer in Germany I find that it is very much grown there.

Mr. KRELL: I have seen it in Bavaria, but it is a very poor crop.

The CHAIRMAN: Still it is cut four times a year.

Mr. KRELL: There is not the strength in it either.

The CHAIRMAN: I was only mentioning the number of times it can be cut.

Mr. KRELL: There is a piece of land near Wimbledon or Surbiton on the left hand side of the South-Western Railway where you see something like ten acres of this lucerne, sown some two or three years ago, and which I think must have given a fair return to the owner of it.

Colonel WOOD: With reference to the purchase of hay, I should like to mention that last November when I was over in Ireland, I was informed that last year was the best hay season they have had in Ireland for years and years. It certainly was one of our worst. I was informed that you could buy at that time anywhere north of Dublin almost an unlimited amount of hay at 30s. a ton. The cost of putting up machinery to press that hay and freight to England would make it 2l. a ton more, which would enable you to deliver the Irish hay here at 3l. 10s. a ton, certainly under the contract price paid all last year.

Colonel GRAVES: The same applied to Yorkshire too.

Major-General DUNNE: I am only going to ask one question of the lecturer. It is said that straw is too bulky and too indigestible for horses. For some years I was out at the Cape, and I never could understand why this should be so, as we always found there that the horses thrived on the straw. We used to ride forty, sixty, or eighty miles a day, and whenever you pulled up at an accommodation place on the road all you did was to "off-saddle" your horse, and give him a bundle of unthreshed oat-straw. He lived entirely on that straw and nothing else, and went on for months and months of hard work on that food. Cannot horses be trained or accustomed after a time to live on oat straw? I speak on this subject with great diffidence.

Lieutenant-Colonel COLVILLE: I have left the Army, but at the present time I am a director of the London Road Car Company, one of the large omnibus companies in London, and we of course always look forward to this, that in the event of war we might have considerable difficulty in feeding our horses, and indeed the Company might be ruined. Consequently, we are always looking out to see if there is any form of compressed food, or any other kind of artificial food, which might under circumstances take the place of ordinary forage. We collect all our food at one dépôt, and distribute it to the various stables all over London all chopped up in bags. Of course the distribution is a matter of great importance and one of expense, and there is no doubt that if the compressed food, such as we see upon the table, could be sold at a price that would answer the purpose of large companies, like the London General Omnibus Company and the Road Car Company, there would be a great

demand for it. Private enterprise would then step in and build the manufactories necessary to make it, and they would then be manufacturers in existence who would make it in time of war for the Government. Therefore it is simply a matter of £ s. d. Now we have not heard, and I have been listening, waiting to hear, what is the cost per ton of this compressed food. Naturally private companies won't pay more than a certain sum for their forage, otherwise they cannot pay a dividend. The moment forage in England goes beyond a certain price they go abroad for it. Companies, I think, are not at all opposed to trying experiments. I persuaded my colleagues to try an experiment the other day. We took a team of horses—eleven, and we tried them with one of these compressed foods. Statistics are always valuable, and perhaps you might like me to mention what the result of that experiment was, if it would be of any interest to the meeting. Without mentioning the food, I do not want to advertise any particular patent, I may say we tried that stud of eleven horses for four weeks. During the first three weeks they received some 3½ lbs. of this concentrated biscuit, 5 lbs. of oats, 3½ lbs. of maize, 2 lbs. of peas, and 12 lbs. of chaff. I may mention we always give our horses about 30 lbs. of stuff of some sort per diem, and that that varies in its constituents; the 30 lbs. given to each horse consists of the varied ingredients, but they are purchased in the market day by day, month by month, and week by week, at a price which will make the whole of it keep the average per horse. The proportions were gradually increased, and during the last week the horses got 15 lbs. of biscuit and 12 lbs. of chaff. Before they began each horse was carefully weighed, and at the end of the time each horse was carefully weighed with this result, that six of the horses lost weight. One horse lost more than 3 quarters 14 lbs., and the total loss of the six horses was 5 quarters 4 lbs. Four horses gained in weight, the total gain being 2 quarters 22 lbs.; so that the total loss on the eleven horses was only 2 quarters and 10 lbs. I mention that because one speaker said that it had been tried on one horse for a certain length of time and it lost 113 lbs.

Colonel GRAVES: That was during the experiments carried on under concentration: one of about twenty horses lost that actual weight.

Lieutenant-Colonel COLVILLE: It shows that six lost and four gained in weight. These horses were all working hard during that time; they were hauling these cars, which weigh some 28 cwt. empty, for ten to sixteen miles every day and three Sundays out of four, which is far harder work than any artillery or cavalry horse is called upon for, and the result was not at all unsatisfactory. Then it was found that this was also cheaper, that it saved some 2d. per week upon each horse, and you will soon see that 2d. a week on each horse will soon make a difference of 1 or 2 per cent. in your dividend. So that all these questions are simply matters of £ s. d. If you can bring this so as to be equally effective with ordinary forage, and at a price that will answer, you will have no difficulty in getting capital to start the necessary machinery. But of course the ingredients of this biscuit make a great deal of difference. I may state that this biscuit that we used consisted to a large extent amongst other things of locust beans, India meal, and linseed meal, and that there were no oats or beans or peas in it. Locust beans and India meal were the chief ingredients, besides other little things. I am extremely sorry the lecturer was not able to go a little more into the question of the supply of forage to our army horses at home, because that is a most interesting matter, and might form the subject of another lecture; but it does appear to me since I have left the Army and have given attention more or less to companies, and therefore to doing things on a business system, that the way the thing is done in the Army is about as little business-like as it is possible for it to be. I cannot for the life of me see why an establishment could not be started at Aldershot exactly as the Road Car Company for London, and why they should not buy their hay and corn and forage direct from the grower, and from the merchant or from abroad, and have it sent home in ship-loads. It might be sent down by canal regularly and stored, and then the forage could be all cut and sent out in bags, each bag containing the quantity for one or two horses, as the case may be; and it might be issued from the central store at a considerable saving, and with very great advantage to the horses. I do occasionally visit cavalry stables, I take the opportunity of obtaining any information I can, and it strikes me that if we supplied our horses with the forage that cavalry

horses are fed upon, and if our horses looked like some of those cavalry horses, the Company would be wound up in a very short time.

Mr. W. STANHOPE, 19th Hussars: I wish to state with regard to what Colonel Liddell said about compressed fodder, that during my experience of it, and we had some experience of it for three years from 1882 to the end of 1885, when some horses of the 19th Hussars were fed entirely on this forage, the quality was very indifferent indeed, and a good deal of it had to be wasted, but that which was good the horses did very well on.

Sir BEAUCHAMP WALKER: With your permission I should like to answer briefly Colonel Colville's remarks. He asked if compressed forage has so many advantages, why it is not more extensively used among London horse owners. The answer is simple, viz., it is not intended for the purposes he mentions, its value consisting of its great portability combined with its nutritive qualities, which cannot be obtained without extra labour, rendering it too expensive for horses belonging to omnibus companies. As regards the second question, I do not think the British Government will attempt the supplying of their own horses in the same way as is done by the omnibus companies for the reason that the officials in charge would be service men and frequently unpossessed of the business knowledge required for managing so large an undertaking. Secondly, the term of office of each one is limited, and should one man succeed his successor might fail. The Indian Government have arrived at the same conclusion, and have adopted a course which I consider a wise one, viz., they work in conjunction with private individuals who thoroughly understand the business they have in hand, and who are not likely to be giving up the business with Government as customers, so to speak, shareholders.

Colonel GRAVES: There is one question I might answer about the supervision as to quality. During the whole of the supply in the first instance, by the firm that made for me for the Government, there was a Government Inspector of some rank or other in the works every day of the week, and at any time he chose to come.

Dr. FLEMING, in reply, said: With regard to the more recent forage trials at Aldershot, I have not alluded to their results, as the object of my paper was really to place before you those of the trials which were made there some time ago. I do not think Goode's food would be a suitable forage for active service. I have tried in my paper to impress upon you the necessity of adhering as closely as possible to the food horses receive all the year round. The food upon which the horse is fed during peace-time should also be his food in war-time, if possible. The artificial preparation of food damages it more or less, so far as the horse's working powers are concerned. The trials at Aldershot, if I remember right, with Goode's food were made upon horses which were stabled. Army horses are not stabled usually during war-time; therefore, we are obliged to provide them with food which we know by long experience to be the best for those which are exposed to all kinds of weather, doing hard work, and undergoing all kinds of hardships. Therefore, I think that we ought to rely upon the results of experiments which have been made with food that the horses are usually fed upon. The oat is a sufficiently concentrated and proper food naturally for our requirements, and with the mode of compressing which you see here, I think we have an excellent grain forage for our horses on active service. We not only have the oat—which is a typical food, a food of the very first importance, but we also have mixed with it the bean, which every hunting man knows in a small proportion is a capital adjunct to the hunter's food. We also have a small proportion of linseed, which the Committee believed was advantageous in supplying a certain amount of heat-forming material and otherwise improving the food for the horse. So that, I think, in the grain-cake we have a capital food for service, and the experience of its use in India, and also in Egypt, shows that the food if well kept, is well suited for horses. With regard to the hay, that which was sent to the Crimea, to New Zealand, to Abyssinia, China, and elsewhere, was long hay. I have shown that feeding with long hay in the field, or on picket line, is a great waste. In muddy, soft ground, or in wet weather, a great portion of it is lost, and in windy weather much of it is blown away. Our system of feeding army horses should be entirely changed with regard to outdoor food. I think a bag such as the one exhibited should be used; it is a large bag, and the crushed grain and chopped hay can be mixed in this bag,

and the horse fed in that way. The experiments at Aldershot were absolutely conclusive as to the value of this mode of feeding. There was no waste; the horse did not have to throw up his head to get to the bottom of the bag, therefore the forage could not escape. He fed comfortably, for the head was not fatigued by the weight of the bag, and in every way the trial was most satisfactory. The bag is extremely valuable in the field, because it will contain three or four days' rations of the grain-cake, whereas the present nosebag will not. I therefore think that in chopped hay-cake and the oat-cake with it, we have a capital food for horses on active service. I believe the compression of these cakes might be carried even further, inasmuch as the hay and grain, if it be ever so hard compressed, is readily flaked off. I have seen cake which has been kept for a long time, but it is rather easily broken; a little more compression would give it more tenacity, and it would stand more knocking about. With regard to accustoming horses to this food, it would be a very good thing if all army horses could be fed one day in the month on compressed forage. Certainly the horses of the 1st Army Corps ought to be fed upon it once a month. The soldier would then be taught how to handle it—how to break it up in the nosebag, and mix it well. The cost of a thousand tons a year would be not greatly beyond the ordinary expense. The Committee reported on the cost of preparation, but as this was ten years ago I am not sure whether any diminution in the cost of preparation has taken place; the cost of the manufacture of the hay-cake in 1882 was 3*l.* in excess of the price of hay per ton. When we calculate the difference in the cost of carriage by ship, and the cubic space required, that a smaller proportion of hay will suffice for a feed, and the great convenience for distribution, I think that excess of cost in the preparation is amply repaid. With regard to the grain-cake, it was 14*l.* per ton as against oats 10*l.* per ton, that is 4*l.* per ton for crushing and compression.

Colonel GRAVES: The oat-cake is supplied now at 10*l.* 10*s.* a ton.

Dr. FLEMING: That is much less. So that with the diminution of the ration which can be made, the great saving in carriage, the handiness of issue, and the absence of waste, I think altogether there would not be any loss—in fact, a great advantage. The bran-cake I look upon as a very satisfactory production. Bran hitherto has not been used in the field, even on board ship there is great trouble with it; but now in the form of this cake, it can be supplied in the field, and it can be carried on board ship easily and with safety. The difference of cost is 3*l.* per ton—a very small difference indeed. With regard to the specimen of alfalfa, or South American lucerne, which is shown here, I do not know of any experiments having been made with it in this country, but I think it is a most valuable forage. The compression appears to improve it wonderfully. There is a section of a block which has a beautiful bouquet, and I am perfectly certain horses will take to it readily. If it can be purchased at a moderate price, it should prove a valuable auxiliary fodder. If this can be obtained from South America in the quantity which is mentioned, it will effect almost a revolution in the hay growing in this country. With regard to Irish hay, the hay both in Ireland and Scotland is not at all adapted for compression. It is allowed to lie on the fields, and become extremely dry and washed out, therefore it is very difficult indeed to transport; while it is so dry that it will not compress. With regard to straw in this country, we do not look upon it as forming part of the ration for our horses. There is no doubt that wheat straw is indigestible, and not good for horses. In South Africa, where the horses are fed on unthreshed oat straw, it is undoubtedly a good forage. Oat straw is that which is best adapted for the horse if straw must be given, and it is a fact that the Cape horse accustomed to oat straw will thrive well upon it. With regard to weighing horses in testing the value of the mode of feeding or kind of food, I think unless weights are very carefully watched, they are extremely fallacious. I do not look upon testing the weight of a horse before a trial of forage and after it, as a very reliable criterion. We ought to look more to the vigour of the horse, to his working prowess, than to his weight. We all know that a horse fat and out of condition will weigh heavier than the same horse when in good condition. At Aldershot, we are too much inclined to lay stress upon a horse's weight, or an increase or decrease of weight. Unless you take into consideration also the working powers of the horse, you are likely to be led into error. If the

horse loses weight, but gains in vigour and strength, you may be certain the forage agrees with him. I do not know that I have anything more to say. I thank you very heartily for your kind consideration, and am only sorry that time has not allowed of expanding my paper so as to cover wider ground.

The CHAIRMAN: I do not think you have been in any way disappointed in the anticipations which I held out to you before opening the proceedings. I told you I had read the lecture with great satisfaction, and I was quite certain you would hear it with equal satisfaction. It is a remarkably interesting lecture, and I think our very warmest thanks are due to Dr. Fleming, the more especially as he tells me that on some future occasion he will supplement his lecture by another. I beg to thank him very much.

Friday, March 15, 1889.

GENERAL G. ERSKINE, Chairman of the Council, in the Chair.

EMPLOYMENT OF DOGS FOR MILITARY PURPOSES.

By Veterinary Surgeon E. E. BENNETT, Army Veterinary
Department.

Preface.

IN being allowed the privilege of bringing to the notice of the members of this Institution the many services which dogs, when specially trained, can render to man in the art and science of war, I have been guided not only by the fact that their utility is being fully recognized and taken advantage of by most Continental Armies, but also that antiquity itself in no small degree sanctions their employment in war. It is to strengthen my position that I propose to preface this paper with the history of the war-dog, from the earliest time to the present day.

In one of the oldest books extant, the *Vendidad* of Zoroaster, we read, "through the instinct of the dog the world exists," and however much this may appear to be an exaggeration, still we must admit that even in the present day it prevails with a certain amount of exactness, for in the northern regions it is an acknowledged fact that without their dogs the people could no longer exist.

From the earliest times, so history tells us, dogs have been employed as auxiliaries in war; they were in frequent use in the Greek and Roman Armies. Plutarch recounts that the garrison of a Greek fort being worn out with fatigue, their enemies decided upon an assault, but by good fortune a dog belonging to the fort made his way to the adjacent town, and by his barking managed to arouse the inhabitants in time to come to the succour of their beleaguered comrades.

The translator of Arian observes, that of all the pugnacious dogs of the classic file, the most renowned were those bred in Epirus, and called Molossian, after one of its chief districts. The prowess of the Canes Molossi rendered them most useful in battle, and they were equally prized in the circus and amphitheatre; their war praises are sung by the Muse of Darcus, and it is recounted that the soldiers of Molossia wept over their faithful canine companions slain in war.

Corinth is said to have been saved by fifty war-dogs, which attacked the enemy who had landed whilst the garrison slept after an orgie, and fought with unbounded courage till all were killed except one, which succeeded in rousing the garrison. Shakespeare thus puts no

figure of speech in the mouth of Antony when he exclaims, "Cry havoc and let slip the dogs of war."

Two hundred dogs brought back from exile the King of the Garamantes in fighting those who opposed themselves to his return.

Polyen recounts that the King of Sparta, when besieging Mantinea, posted numerous dogs which kept watch, and they were the means of intercepting messengers and stopping those who tried to escape.

The Magnesians, in their wars against the Ephesians, attached a dog to each warrior, and these being the first to advance, their advent invariably caused trouble in the enemy's ranks.

The Colophonians used cohorts of dogs, and those of the Cimbrians defended the chariots of their wounded masters during their retreat from the Romans.

Philip, King of Macedonia, wishing to conquer the country of Argile, which abounded in woods and mountains, had recourse to a large number of mastiffs to enable him the better to follow up the intrepid mountaineers.

The Huns of Attila confided the safe keeping of their camps to dogs of colossal size and strength.

The Romans, recognizing the value of dogs, kept those of keen scent and hearing in their forts and watch-towers to give warning of the approach of an enemy: during one of the assaults of the Gauls on the Capitol, the dogs, being worn out with incessant privation, failed, however, to give timely notice, and it was left to geese to give the alarm to the Roman soldiers.

Massinissa, distrusting his courtiers and followers, organized a body-guard of dogs.

A manuscript of the 14th century contains the following passage: "Dogs are trained to savagely bite the enemy, they are coated with mail, and carry a brazen vase on their backs partially filled with a resinous substance, together with a sponge soaked in spirit; the horses of the enemy, thoroughly upset by the bites of these creatures and by the burning fire from the vases, fly in disorder."

The famous dogs of the Knights of Rhodes, which could tell at a distance a Turk from a Christian, and treated him accordingly, were mastiffs brought from England.

The Spaniards employed dogs against the American Indians, bloodhounds being in especial favour, and they took an active part in their proceedings. They drew their rations like soldiers, and many a native was run down by them in the dense forests and other almost inaccessible places.

They were found of such utility in Peru and Mexico, that the King of Spain decreed a pension for the maintenance of these brave allies.

The Irish deerhound had a great repute in Iceland, and was the constant companion of the Olafs, even accompanying them on their vessels. It is recorded of Olaf Paa, in the Saga of Nials burning, that in making a representation to Gunnar he said: "I will give thee three things: a golden bracelet, a kirtle which belonged to Myrkiatin, King of Ireland, and a dog which I got in the same country; he is

huge of limb, and, for a follower, is equal to an able man; moreover he hath man's wit and will bark at thine enemies but never at thy friends, and he will lay down his life for thee: Samr is his name."

William the Silent, the Founder of the Dutch Republic, owed his life to his spaniel, for in the night attack before Mons, the Spaniards were on the point of entering the monarch's tent, when the dog sprang forward and tried by barking to arouse his master, but this not sufficing he finally scratched his face with his paws; there was just time for the Prince to mount a horse that had been left ready saddled and to escape in the darkness; his attendants and servants, however, lost their lives.

In suppressing the Irish rebellion during the reign of Queen Elizabeth, the Earl of Essex had 800 dogs, bloodhounds it is said, which accompanied the Army.

St. Malo, when it formed a separate Republic, was guarded by 300 dogs, which were kept at the expense of the city, and which effectively protected it against surprise and pillage.

The Piedmontese in the 16th century employed dogs in their mountainous wars, organized in bands of 200 each, and found them of much utility.

Philip V, in 1702, at Mont Philippe and at the Fort of Etoile, fed the dogs which were at the gates and which remained uncared for by the Austrians, and afterwards turned them to useful account, as auxiliary sentinels and for accompanying the patrols.

In 1769 it was seriously proposed by the English to use dogs against the North American Indians, to follow them up, and for the better security of the camps, for many sentries were killed on their posts by the natives.

In 1778 the Turks were signally helped by dogs, both at the siege of Dubitza and at Gino Berdo; they used them as a cordon to guard their camps, and in later times to track the unfortunate inhabitants of the countries they were devastating, and who sought an asylum from their rapine in the woods and caves.

In the history of the defence of Tangiers by the English, occurs the following allusion to dogs: "One morning early the Moors laid a great ambush within the palisades of the Western Cove, with the intention, as we supposed, of intercepting our guards on the relief; but their presence being detected by the dogs which were *purposely* kept, they, by their barking, put our soldiers on the alert, who appearing with so much readiness with their arms and grenadoes to oppose the enemy, the latter immediately withdrew, but not before many were killed and wounded."

The fame of the dog Moustache is renowned; when encamped with his regiment before Alexandria, the first night he was the means of detecting a surprise; he fought at Marengo and saved the standard of his regiment at Austerlitz, for which service he was decorated on the battlefield by Marshal Lannes; he served also in the Spanish Campaign, and was here again of great use in the detection of ambushes; he was finally killed by a bullet sometime after the siege of Badajoz.

In 1822, during the siege of Athens, the insurgents tried to carry the city by assault during the night; the dogs, which were in great numbers within, kept up an incessant barking and so disconcerted the rebels, that they were unable to carry out their design.

During the siege of Sebastopol, the French are said to have several times received early warning of sorties through the agency of a dog called Minette; and their sentries in the trenches received much valuable assistance from several dogs that from time to time accompanied them.

The Arabs in Africa frequently employed dogs against the French; these animals like those of Burmah have an intolerable dislike to all Europeans, and in fact to every one that does not wear the burnous; the French, recognizing their utility, enlisted dogs into their service with signal advantage: thus, during the rebellion of an Arab tribe, the garrison of Milianah were aided by a four-footed ally, which had previously been instructed in the art of reconnaissance; every day they sent him out of the town, and he would scour the vicinity in every direction for a distance of 1,200 metres; he replaced the patrols, and the scouting was as effectually yet more rapidly carried out, and without danger to any one. After the capture of Bougie by the French, the natives frequently killed the soldiers on outpost duty at night, and often carried off arms, ammunition, and cattle, and it was only by the use of forty dogs that these tactics were put an end to.

In Mexico, during the French campaign, they were most useful in giving alarm of the approach of the much-dreaded guerillas, and they were further employed for tracking these desperadoes to their fastnesses.

After the famous expedition of General Skobeleff in Asia Minor, the Russians decided to instruct dogs as sentries, and without doubt this decision was arrived at from the frequent and fatal surprises that their adversaries inflicted on them (they are now used for artillery as well as the other arms in that country). Finally, the Germans, always to the fore in the art of war, took up the question of war-dogs, their first experiments being carried out at Goslar in 1885-86, where they were chiefly instructed in outpost duties; and it was in 1887, whilst present at the manœuvres in Brunswick, that I first made the acquaintance of the military dog and was led to recognize his utility. About twenty dogs of all shapes and sizes were attached to the Jäger Battalion (the equivalent of our Rifles), for these being always employed with the advance guard, and composed chiefly of foresters, who are naturally skilled in the care of dogs, it was considered that the experiments would there find every reasonable chance of success.

The services which we may be led to expect from the enrolment of dogs into an army are varied, and cannot altogether be definitely laid down; but there are at least five distinct objects for which they can be used, viz. :-

- (1.) As *Auxiliary Sentinels* to the outposts and sentries and to the advanced rear and flank guards in general.
- (2.) As *Scouts*, on the march, on reconnaissance, and patrol duties.

- (3.) As *Despatch Carriers*, on the march, in camp, in action, &c.
- (4.) As auxiliary *Ammunition Carriers*, on the march and in action.
- (5.) As *Searchers* for the wounded and killed after an engagement.

The rôle of sentinel being the most important, I have placed it first, and we must now pass on to consider more in detail the various conditions under which dogs can be usefully employed in war.

Rôle as Auxiliary Sentinel to the Outposts, &c.

Every body of troops in the field is dependent for security upon its outposts; their duty is "to act as the feelers of an army, guarding it from every danger, and keeping it constantly informed of everything that can add to its safety or assist its movements."¹ At night, specially, it is of the utmost importance that troops have the full benefit of undisturbed repose, and it is upon the sentries that the arduous and responsible duty of guarding the camp or bivouac mainly falls; they are now posted double, which, although greatly enhancing the general security, increases the number of men employed on this fatiguing service, to the detriment of the efficiency of the advanced guard supplying them. It is at night, and during inclement or foggy weather, that the endurance and powers of perception of the sentries are most keenly tried, when even the most seasoned soldiers are liable to error, and mistakes made by causing unnecessary alarms are often most baneful in their results, and if oft repeated, end by being unheeded by the remainder of the outposts, and an important safeguard to security is liable to be destroyed.² It was a saying of Frederick the Great, that it was pardonable to be defeated but never to be surprised, yet the history of nearly every war gives frequent testimony to the havoc committed by night attacks and surprises; and these same attacks are, it is considered by competent authorities, likely to play a very prominent part in all future campaigns, for an enterprising enemy if successful would reap the advantage of having gained their point with the least possible loss to themselves, which in these days of magazine rifles and quick-firing guns is to be by no means underrated. Attacks of this kind are much favoured when troops are wearied by long marches, and when the sentries, besides being fatigued, have in addition to struggle against hunger and severe cold, under these adverse conditions their faculties become dulled, and they become more or less indifferent to danger; anything therefore which will tend towards increasing the security of the sentries should be gladly welcomed, and it is just in this position of affairs that the services of the military dog would shine to greatest advantage. It has been ascertained that on a calm night with a fair wind, dogs can with certainty detect the approach of strangers up to from 400 to 500 yards, and in inclement weather it may be assumed that this faculty, a combination of scent and hearing and to a minor degree sight, will reach up to 150 or 200 yards, and not only this, they

¹ *Vide* Lord Wolseley's Pocket-book.

² "Minor Tactics," Colonel Clery.

can distinguish between friend and foe and will act accordingly; granting that, in average weather, nothing will escape the vigilance of our canine friend up to say 200 yards, then if each double sentry be supplied with a dog, and they be posted at 300 yards apart, the interval will be guarded by the two dogs with perfect ease, supported by the men. When in an enemy's vicinity the cordon system has to be maintained, to prevent them penetrating the line of outposts and obtaining information. With the assistance of our four-footed allies the number of the outposts can be materially reduced, without in any way endangering the safety of the troops which they cover. Again, if from any cause a line of sentries has to be posted through the centre or through a portion of a wood or forest, the disadvantages of so doing are reduced to a minimum, and further, the necessity of diminishing the distance between the sentries at night and between them and the supporting picquet is no longer required, and the additional security gained by the extended night line will do much towards insuring the benefits of full repose to the troops. I think therefore that we may fairly assume that the chances of successful night attacks and surprises will by the employment of dog vedettes be very greatly lessened, if not altogether prevented.

The Dog Scout: his Rôle on the March, on Reconnaissance, and Patrol Duties.

Marching is one of the most serious considerations in war, its chief object being to bring troops to the right place in the least possible time compatible with efficiency; rapidity of movement is, therefore, one of the main points to be aimed at. In our recent wars against semi-civilized troops in hot climates, mobility has necessarily been an essential; and in order that our men might be as little hampered as possible, kit and baggage generally have been considerably reduced; but this very rapidity of motion, when in an enemy's neighbourhood, must enormously increase the responsibilities of the advanced guard and reconnoitring parties, and, however desirous men may be of conscientiously performing their scouting, they must to some extent give way to the urgency of getting the main body forward. In an enclosed or mountainous district, where the work of scouting almost entirely devolves upon infantry, the duties of the advanced guard are both onerous and fatiguing, and the security gained is in no way commensurate with the efforts towards obtaining it. Repeatedly have they to reconnoitre woods, ravines, outlying farms, hamlets, and other places likely to afford shelter to the enemy, and these may lie at some distance to the right or left of the desired route, yet they cannot be passed by, parties must be detailed to scour them, and it is imperative that they rejoin with the least possible delay. This service, constantly recurring, is most trying to the men, and may end by being only imperfectly performed; every detail, therefore, which will in any way lessen the strain put upon them, is worthy of careful consideration, and I think it must be admitted that by enlisting the intelligence and activity of the dog, a most powerful ally is obtained. In accompany-

ing the scouts they can during the day be made to range at a convenient distance in front of them, increasing the confidence of the men, lessening fatigue, and allowing the work to be as efficiently, yet more rapidly, carried out. When in the vicinity of small woods and coverts, the dogs can be sent forward to scour the outskirts, and later in penetrating them together with the scouts, which they should always precede, and, just as the pointer denotes without fail the presence of the quarry, so will our war-dog, with unerring certainty, detect the enemy if near at hand, and by his demeanour give timely notice of his whereabouts.

In woods and forests, too large to thoroughly reconnoitre, our new allies will materially augment the zone of surveillance, and, although the enemy may not be seen, yet they will readily be aware if he has recently passed over the ground, and this knowledge would naturally be of no small benefit to a column obliged to traverse such wood or forest. When villages have to be entered, the dogs will be made to go on in advance and to scour side streets, farmyards, &c., and much valuable time will be saved thereby, and it need not be feared that a dog properly trained is ever likely to lead one into error. In defiles, ravines, &c., a similar method can be adopted and their passage much facilitated. The summits of hills also can be scoured, preparatory to the scouts passing over. For the flank and rear guards they can in like manner be made use of, and they will increase in no small degree the vigilance and confidence of the men and the safety and welfare of the column. In mountainous regions, during bad weather, our dogs would be of much utility in enabling paths to be discerned, crevices and pitfalls generally to be avoided, and in the event of detached parties going astray, succour to be brought to them with all celerity. In this particular service the St. Bernard would be specially valuable, for the renown of this breed under these conditions is notorious: one dog alone, Barry by name, has a record of having saved over forty lives by his own individual exertions. Moreover, in an open country, during severe wintry weather, when cavalry, owing to the slippery state of the roads, could with difficulty, if at all, act, the military dog would here again come in as a useful adjunct to infantry, and would render the latter in some degree independent of the sister force. In night marches, when additional precautions to those necessary for troops during daylight have to be undertaken, the faculties of the dog would better enable the advance guard to perform their duties, and they would assist in the avoidance of regrettable mistakes and help in the detection of ambushes and surprises.

Rôle as a Despatch Carrier.

Doubtless cavalry are the best means for keeping up the communications between the different fractions composing a column, but their duties are so multiplied, that they are not available for every service, and there are times, for example at night, when they cannot always be made use of. Signalling, too, is a very valuable method of transferring messages, but it has the drawback of requiring skilled

men for carrying it out, and moreover in an enclosed country, or in woods, or owing to the natural disposition of the ground, it may be altogether impracticable, and it has the disadvantage of attracting the enemy and putting them on the alert, and when in close proximity to them it is impossible to attempt to sustain it, and again at night it may with no small difficulty be established. By the aid of our dog courier we have a method of communication available at all times, and under all conditions of weather and ground. The message being written is placed in the pocket of the collar, and the dog despatched on his mission, which if well trained he will carry out with wonderful rapidity. This system has the advantage of sparing both men and horseflesh much fatigue, especially in a rough country or hilly or swampy district. There is a happy reference on this point in Tom Bulkeley, of Lissington, where we are told a brigand chief of Albania entrusted the conveyance of secret despatches to his faithful hounds. The following details of a trial recently carried out by the Berlin Sporting Club between cyclists and dogs are interesting. The distance run was 2 kilometres (about $1\frac{1}{4}$ miles). A fine pointer completed the course in 2 minutes 45 seconds, being closely followed by a succession of setters and mastiffs; the leading bicyclist took 4 minutes, only a few lengths ahead of a poodle, while two tricyclists came in last, having occupied 5 and 6 minutes respectively for the race.¹ In some earlier trials in the same country it was found that dogs were second to pigeons, whilst they far outdistanced cavalry in the rapidity with which they covered the ground. It is in no way advocated that the dog courier should supersede cavalry or signallers, it is simply an additional method of keeping up communication, and should therefore be conjointly used with the other methods now in vogue.

It is at night with the outposts, patrols, and reconnoitring parties that the dog messenger would be most useful; if through any misadventure a detached party should lose its way and fall into the hands of the enemy, the dog might be let loose prior to its actual capture or annihilation, and his return alone, though bearing no despatch, would be an indication of the occurrence, and would be the means of putting the outposts and picquets on their guard.

The Dog as an Ammunition Carrier.

The question of the supply of ammunition to the firing line in an engagement is one of much importance, and is at all times a hazardous undertaking. The distance between the reserve supply and those in action may be considerable, and under a hot fire the chances of the carriers arriving safely at their destination is often small, for the enemy may very possibly direct their fire specially on these men. Our war-dog may here again be employed as an auxiliary carrier, and being comparatively small and moving rapidly, he will not attract the notice of the enemy to the same extent. For isolated parties in advance of the main body, and over ground that men could only with

¹ On an ordinary road.

difficulty traverse, and always on the outward march, dogs could be utilized in the manner indicated.

The Dog as Searcher for the Wounded.

To aid in the search of the wounded and killed, the dog can again be turned to good account, specially so in an enclosed and well-timbered country, and in snowy or foggy weather. It is almost impossible in these days, when armies are of such immense size, and actions in consequence extend over such a large area, to collect all the wounded; many crawl to a place of temporary shelter, and there wait anxiously for succour, which may not arrive in time to prevent them dying from exhaustion or long exposure. Search parties aided by dogs would be greatly facilitated in their work and much unavoidable suffering, such as occurred in the vineyards round Metz, would be prevented. The dog could carry a flask containing some hospital comfort, which at night would be much appreciated by the wounded, until other and more substantial help arrived.

Other General Conditions under which the Military Dog could be turned to advantage.

In Sieges.—During the investment the number of sentries could be considerably reduced without in any degree detracting from the complete isolation of the invested fortress from the outer world. Sorties also would have less chance of success, for long before the sentry would be aware that anything unusual was astir, the dog would warn him of the impending danger, and the time thus gained, would be of great moment in getting under arms.

To the besieged they would be useful as scouts and sentinels, and from previous considerations on this point it will be unnecessary to recapitulate.

In Camp.—The dogs could be placed as auxiliary sentinels over ammunition, stores, and baggage; petty robberies of comestibles would be of less frequent occurrence by their use, for it must be remembered that natives, muleteers, and others who are employed both in camp and on the line of march are particularly partial to sugar, tea, coffee, salt, and other edible stores, which they purloin not only to consume, but to sell.

Again, for the better protection of convoys on the march and when parked at night; with foraging parties when entering hostile villages and hamlets, and for helping to suppress brigandage, our dog could fulfil his mission.

For the prevention of the tactics of such people as the Ghazis and Soudanese who at night stealthily approach sentries and at an opportune moment fatally stab them, carrying off arms and ammunition; this oft repeated, ends by establishing a funk, and without just cause sentries may fire at some imaginary foe and thereby raise an alarm which cannot but be detrimental to the morale of the troops. The Ghazi, not content with the life of a single sentry, will get into

camp and run amuck, as it is termed, stabbing several before he himself is winged. By the enlistment of dogs these tactics will be a thing of the past, and many valuable lives spared.

The Breeds to Employ.—You never know your dog until you try him; some of the most unlikely will with care turn out the best, though, for the sake of appearance, it is well to avoid enlisting curs. Undoubtedly, for all-round purposes, the *Native or Farmers' Sheep-Dog* has most to recommend him; he has been trained through many generations to watchfulness and obedience; he is very observant, tractable, and easy to teach, carrying out his orders with alacrity and cheerfulness; he would make the best of sentinels, as he accustoms himself easily to remain for long periods on the same spot; he would be a most reliable despatch carrier, as he has a great sense of honour and nothing will seduce him from the performance of his duty. In Australia the sheep-dog is often the sole means of communication between the shepherd and his master, and travels long distances in this way with his despatches; it has been truly remarked that every collie is born with a certain amount of good sense, and it is only a question of training whether he turns out well or ill; there never was a truer proverb in his case than "Like master like dog." With all these attributes it might be thought inexpedient to enlist the services of other breeds, but as it is unwise to pin your system to one particular class, we must give others a chance of proving their merits.

The *Retriever* makes a good war-dog; he will usually stand fire well, and is strong and can therefore be advantageously used as a carrier of ammunition, and he would prove useful in search of the wounded.

Pointers and Setters could, after a few generations spent in military service, be turned to very good account, more especially for tracking purposes, as their sense of smell is very highly developed; a remarkable exhibition of this power in pointers was lately recorded in the "Field."

Spaniels have much to recommend them. In Germany they are considered second to the sheep-dog; they have good noses and will hunt out the whereabouts of their master with perseverance and rapidity; moreover, they are small and would attract little notice, and being fond of the water they would not be daunted by a stream or river intercepting them on their journey.

Bloodhounds are, *par excellence*, the hounds for tracking, they would be of infinite service in following up parties of the enemy who might be troublesome, through woods and in other places difficult of access, such as mountains, jungles, ravines, &c. Dacoits and other marauders could soon be run down by their means, and a most harassing system of warfare be thus signally checked; their powers of scent are so acute, that I am assured they neither require to hear nor see, but will give warning of the approach of any person, even at a very considerable distance, by scent alone. The recent trials at Boxmoor, and those of the Kennel Club, are sufficiently convincing of the high merit of this breed.

Poodles are easily taught, but are of much too friendly a disposition

to be altogether depended on. They positively enjoy carrying things, and would be useful as auxiliaries in the supply of ammunition, and of aiding in the search of the wounded.

The *Pommeranian* having an inherent dislike to all strangers, and being of a most suspicious turn of mind, could be turned to account as an auxiliary sentinel, but owing to the great difficulty in teaching him not to bark, his employment is not altogether to be recommended.

In Germany, many other varieties besides those we have mentioned are trained in military duties, *e.g.*, greyhounds, foxhounds, terriers, &c.—each useful in their way. Terriers being always on the alert, would be capital sentinels; foxhounds could be employed specially for tracking, and greyhounds for speed, as message carriers.

In France the sheep-dog is in greatest favour, though it is said the smugglers and Customs dogs on the Belgian frontier (a species of sheep-dog) would be by far the best for all-round purposes.

In Austria, the Dalmatian is used amongst others. In Russia the Caucasian dog, and in Turkey the Asiatic sheep-dog. In Italy various breeds, and the Italians consider females preferable to males, owing to their keener scenting powers.

In this country, where our breeds of dogs have been brought to such perfection, we should have every advantage in giving the *system* a very much more thorough trial than on the Continent, with, at the same time, a greater chance of success. I do not see why, if the military dog became a recognized institution, we should not form a special breed of war-dogs, just as there are dogs for the chase, dogs for the gun, &c.

It has been suggested, though not seriously, I think, that a fighting breed might be established, which would run down and kill all the four-footed warriors of the enemy, just as the Customs Officers' dogs are taught to run down those of the smuggler persuasion on the French and Belgian frontier. It is said that there are considerably over 100,000 dogs employed in this contraband trade, but owing to their cleverness hardly more than 1 per cent. are yearly caught in the act.

Training, Treatment, and General Care of the War-Dog.

We have already pointed out the principal ways dogs can be of service to an army in the field, and their training would naturally be undertaken in these different directions. There is no royal road, I am afraid, to the completion of their education—much patience and perseverance is required, and a natural aptitude on the part of the trainer to improve upon the gumption of the dogs, and to adapt himself to the varying peculiarities of each.

As scouts, they can be easily trained, every dog having a natural predilection for ranging. They should be encouraged to range in front of the trainer up to any convenient distance, and in order that they may realize what is expected of them, soldiers should be posted here and there, and whenever they come within reasonable proximity to these men, the latter should, if the dogs do not take notice of them, either pretend to, or actually strike them, so that they may be put on

their guard, and after a short time it will be found that the dogs will be fully alive to the occasion. Barking should, on no account, be permitted, but by growling, returning to the trainer, or other indication, they must give warning that danger is near at hand.

The Germans dress men in French and Russian uniforms (and the French have recourse to similar means), who lie in wait and frighten the dogs, so that very early in their education they learn to recognize the common enemy.

At night it is prudent, unless you can thoroughly trust your pupil, to have him led on a chain, he will then be under direct control, and there will be little or no danger of his barking, for he would otherwise put the enemy on the alert; and his faculties of perception are, even when prevented from ranging, sufficiently acute to enable him to detect a stranger at a very considerable distance.

To act as sentinels dogs take kindly enough; each sentry (double) should be supplied with one, and they should be exercised by day, and specially by night, to give early notice of anything unusual astir.

The rôle of courier will be the most difficult to inculcate; he will probably take kindly enough to the preliminary training, which is carried out by taking the dog a short way from his master, and letting him return at top speed, and gradually increasing the distance until he will come back with certainty at least a mile or more; this should be practised by day and by night, and it is imperative that the dog be taught to use his nose, for it is not altogether wise to allow him to trust entirely to his bump of locality. I find that my dogs perform their journeys at night almost quicker than during the day, the disturbing influences are less, and they seem to think it a matter of life and death to return as rapidly as possible. They must be instructed not to allow any stranger to intercept or stop them, this there is little difficulty in as a rule. One well-trained collie in a German regiment on the approach of anyone he does not know, will hide himself in the nearest ditch or other convenient place, and will wait until he passes, the dog then continues his journey only to repeat the process should he be again intercepted, and will persevere in this manner till safely arriving at his destination. For carrying despatches, a leather pocket must be attached to the collar of handy size, and easily to be opened and closed.

As ammunition carrier to supply the firing line, the method of training is very similar. Harness with properly adjusted paniers (as shown) will have to be worn. Those which I employ are constructed to carry eighty rounds (8 lbs.) which in the new ammunition will amount to double that number for the same weight. The dogs will further be taught to stand fire. To search for the wounded and killed, men simulating these conditions must be posted here and there on the ground the dogs range over, behind trees, hedges, houses, &c., and having found their man, they must return to the search party, and give indication of his whereabouts. They might carry a tablet and pencil on which the wounded man could write, localizing his position, which would be of great use to search parties at night.

The training should first be undertaken at from six to nine months old, daily lessons of such a length as not to weary or disgust the dogs, remembering always that progress to be real must be gradual, and that kindness must be the guiding rule of those in charge.

As to the care of the dogs in regiments, volunteers should be called for, and none but reliable, good-tempered men be allowed to look after them. If it is proposed to employ two dogs per company as in foreign armies, then one man per company should take charge of and feed them. Doubtless the Officers would assist in this matter of housing and keeping them, for it would be to the mutual benefit of themselves, their regiment, and the Army at large, and as most Officers have a dog of some sort, it would be preferable to keep one that was useful rather than one that was not.

In Germany each dog has a separate kennel or barrel, but I think if housed by the Officers, non-commissioned officers, and men, it would be better, as the dogs would more closely associate themselves to the regiment, and would be more constantly in contact with the human controlling influence; the kennel method further has the decided disadvantage of being provocative of barking.

As to their food, the leavings from the men's dinners, surplus vegetables and bread, with additions from the Officers' and sergeants' messes, would be more than sufficient to feed all the dogs necessary; in this way no extra expense would be incurred which might seriously militate against the introduction of such a system into any army. The young dogs should be fed twice, the older once daily. In cold weather when doing sentry duty at night, short-haired dogs should be provided with a coat made from any rough material at hand, this will add to their comfort and enable them the better to perform what is required of them.

The supply of dogs for military purposes would, I feel sure, be readily met by the sporting public, who would supplement those belonging to the Officers, by the surplus from their kennels; but if sufficient were not forthcoming, the expense of purchasing puppies at from four to six months old would not be very great. Many Volunteer regiments might in all probability take up the system and would gladly yield up their trained canine companions in the time of national need.

Further, after obtaining a substantial footing it might be thought desirable to start a special kennel for the supply of dogs, and bred from those already doing duty with the colours.

The Naval Dog.

In these days when in naval warfare such a very sharp look-out has to be maintained against the approach of torpedo-boats at night, the dog might materially assist those employed in keeping watch; he might also be most useful in foggy weather in the prevention of collisions by giving timely warning of the whereabouts of approaching craft, and further when night attacks and assaults have to

be made on shore, the various uses to which we put the military dog could equally well be undertaken by his naval *confrère*.

In conclusion, I beg to point out that in the foregoing paper I have endeavoured to show the advantages that may accrue from the enlistment of dogs into an army. For the perfecting of this system it is essential that a long and thorough peace training be adopted, for it cannot be left to the last moment with any hope of being successfully employed. Doubtless this subject, like all others, has another side to it, and I shall be glad if you will be so good as to give it a full discussion, as thereby I shall hope to learn much which may be of use in enabling me to carry out further trials.

At the close of the lecture two dogs were exhibited, one carrying pouches filled with 80 rounds of ammunition, and the other with a pocket under the ear for despatches.

Captain CURTIS, R.N. : I am very glad to have this opportunity of relating what the doctor in the Turkish Contingent at Smyrna told me. He said, if the search parties had had a dog when sent into the mountains to look for "Simon," and his gang who kidnapped him in 1854, they would have found him. The robbers who shifted their quarters at night and hid up by day, more than once heard these arch parties talking in close proximity to their hiding place, and Simon, with a drawn dagger, threatened instant death to the doctor if he spoke. If the search party had been accompanied by a dog of some kind there can be no doubt that the whereabouts of the doctor would have been very soon discovered, and he would have been rescued from the hands of his captors, instead of being deprived of his liberty for so long. Eventually the doctor was ransomed, some shepherds, tempted by the reward of 200*l.*, having cut off the head of Simon. About five or six years ago I wrote to one of the papers, and related what the doctor told me; however, they did not think it worth while to publish my letter, and I am very glad to have this opportunity of mentioning the incident here, because it may lead to soldiers employing dogs when they are engaged in similar work to that which I have described. At the time of the Zanthium Expedition of 1844, although we tried to coax them in every way to come to us, we could not at first get any native dogs, notwithstanding the mutual attachment which exists between Englishmen and the canine species. However, three dogs, by giving them the offal of cattle we slaughtered, became friendly with us. One, I remember, was a large wolf-like dog, named "Lion;" you could not get that dog into the house at all, but it guarded the whole of our camp, and, in company with two others of its species, kept off the jackals and also, strange to say, the dogs' former masters. They would not allow any stranger to come near. They used to follow our men down the river bank when pontooning, and come up with them. But, melancholy to relate, when the party broke up and we embarked, we had to leave our four-footed friends behind, as the Captains of the men-of-war in those days, thinking one dog on board quite enough, would not allow the native dogs to come on board ship. We went to Malta, and when we came back again we found that the dogs had remained on the beach all the time we were away. They were literally nothing but skin and bone. Ultimately "Lion" was taken on board after swimming through the surf, the sailors pleading that he should be allowed to remain with them for a little while. They fatted him up, and in a fight that he had with the First Lieutenant's dog, a large Newfoundland, the latter was (although previously the Newfoundland would not let "Lion" come on the quarter-deck) nowhere. Lieutenant H. Temple presented the dog "Lion" to Dr. Watt, Inspector of Malta Hospital; the dog was much admired, and, I believe, ended his days in peace and honourable retirement, for valuable services rendered. The lecturer has, amongst others, mentioned the shepherd's dog. In addition to the

collie there is what we know as the Smithfield or drover's dog, a dog which is, naturally "bob-tailed," and which is a most sagacious animal, and capable of being trained to almost any work. I should like to ask which of those dogs the lecturer would suggest for use in assisting in military and other similar work. I may say I have seen in Scotland three men standing on the road, three-quarters of a mile off their sheep, and the dogs up on the mountain side, and the men, by just waving their hands, would get the dogs to separate their respective sheep. When I have been in command of a coastguard station I have always encouraged coastguard men to have a dog, believing, as I do, that a man with a dog is much better able to perform his duties than a man without a dog. If the man went to sleep the dog would rouse him when anybody came near, so that it is self-evident that it is much better for a man to have a dog accompanying him on his rounds. The lurchers, which poachers mostly use, are very intelligent dogs; they have a very keen scent, and they will retrieve and do the bidding of their masters without a word being uttered. The best way to train a dog to any trick or to perform any service, is to give him something tempting to eat when he has done something satisfactorily which is required of him, as dogs, like their masters, can very often be successfully appealed to through their stomachs. I have been used to give dogs a bit of biscuit as a reward, and I think that is the most effectual way. Do I understand the lecturer to say that the dog should be chained or made fast when with the picket?

MR. BENNETT: For night work dogs should be on the chain, unless you can thoroughly trust them not to bark.

Captain CURTIS: The fine for killing a dog in Turkey Admiral Lord Lyons told me was exacted in this way: the dead dog is held up by the tail, with his forepaws touching the ground, and the fine consists of as much corn as will cover the dog when in that position. That is done in order to prevent people from shooting a dog. Anybody who has been shooting on the Bosphorus knows what these dogs are, and that the only way you can keep them off is to keep the muzzle of your gun almost at the roof of their mouth. You must not turn your back to them, but walk backwards, and if they want the gun let them bite the barrel. When you get beyond their masters' bounds they will retire.¹

DR. FLEMING: As to the value of the lecture I have no doubt whatever. It is an entirely novel feature in lectures in this Institution to have a new animal introduced for discussion, especially with regard to warfare. The high intelligence of the dog, its extreme attachment to men, and its great docility, should enable it to perform good service to him in war; the question is whether, in our home Army, it would be advantageous to enlist the services of the dog. We know that dogs are peculiarly impressionable to climate; therefore, dogs which were trained in this country might be of little value in the East or in other foreign countries. One great feature in the training of dogs on the Continent is undoubtedly with regard to the frontier service, that is, the dogs are trained to be employed in their own country. Whether dogs trained in this country and sent to South Africa or to India would be as useful, is questionable—I very much doubt it. Dogs are very much impressed by their location, and for dogs to be trained usefully for one purpose they should know the enemy as well as the trainer! I, therefore, think dogs trained in this country to serve with our Army would be very much at fault if they were sent to South Africa and had to look out for Zulus. And then also as to climate, dogs imported from this country into warm climates suffer very much indeed. It therefore struck me when I heard the lecture, that dogs to be useful to an army should be trained in the locality in which they were to be used—there is no doubt about that. I think dogs might be employed as useful auxiliaries in the Army, and, perhaps, the sooner they are so employed the better. With regard to scouting, with regard to watching, and even with regard to carrying, I think the dog might be employed most usefully. Nevertheless, I think the employment of the dog in the Army will introduce a very strange feature; we shall have dogs trained to intercept dogs, and we shall have men engaging in combat along with dogs. It will be rather a curious thing to find fighting dogs introduced among fighting men;

¹ "The Dog," by W. Youatt, is a good book, full of wonderful anecdotes of sagacity and faithfulness. Published by Longman, Green, and Co.

nevertheless, if dogs are to be trained to carry messages dogs must be trained to capture those messengers, and we shall have the intelligence of the dog developed to a higher degree in this direction, perhaps than it ever has been before. I think the lecture is an exceedingly valuable one, and very suggestive, and if dogs can be employed in our Army it will aid us very much, because now-a-days the intelligence of the soldier requires to be very highly developed; and he needs all the assistance he possibly can get from the horse, the elephant, the camel, the bullock, and the mule. Therefore, if the dog can be also usefully employed so much the better for our Army.

Captain CURTIS: Would the lecturer suggest how many dogs should be attached to each company?

Mr. BENNETT: Two for each company.

Rev. THEOPHILUS BENNETT: Would you permit an observation from a clergyman? I am an incumbent in Northumberland, and I have talked to a number of my parishioners on this subject of dogs as they will be, I hope, used in war, and there has not been a person I have spoken to on the subject who has not expressed great approval of the idea. Because, I suppose we shall all agree that the life of a man is more valuable than the life of a dog, and using dogs for various purposes with horses and men, will, I hope, be found to be a step in the right direction. There is another view that we outsiders take of it, and that is that the dog is a much smaller mark than a horse and man. A horse and man can be much more easily hit by the enemy than a dog, and therefore he has many more chances of getting to the far end than a horse and man have. There again I think it would be a very great advantage. There are many other points in which it is obvious that the employment of dogs for war purposes would be of great use. Personally, I have found that dogs are most faithful; they are not likely to be bought over by the enemy: they are likely to be honest—at least, that has been my experience of dogs—they have almost the honest expression in their countenance, and I have no doubt as to any message entrusted to a dog he would be found an honest messenger.

The CHAIRMAN: Perhaps Sir Beauchamp Walker can tell us something about the German Army.

General Sir BEAUCHAMP WALKER: I have not the least idea what the Germans are doing, but I think there is one point which Mr. Bennett has omitted fully to appreciate, and that is the use of dogs as foragers. A good dog on service would be invaluable. When at the Curragh, we had a dog who always foraged about, and constantly brought home food from our nearest neighbours. He got us into continual disgrace, and one had to make the only reparation in one's power, which was to restore something of the same kind in an undisturbed condition. But I once saw an instance of the use of a dog as a forager which was somewhat remarkable. That was at the very hottest time of the Battle of Königgrätz. As we got to the village of Chlum, a hare was started, and a dog belonging to one of the gentlemen on the staff of the late Emperor of Germany chased, caught and killed that hare, which his master immediately stuffed into his wallet. I believe he was the only one of our party who had any supper that night. I certainly had none, and I do not know anybody else who had, but he said the next morning he had had a capital hare stew. I think, therefore, to the uses of a dog in war which Mr. Bennett has so very ably put before us, he might add that of a skilful forager.

General J. T. WALKER: I can perhaps give you an illustration of the manner in which the intelligence of a dog becomes developed under circumstances of difficulty and danger. On the Peshawur frontier I once went into an Afreed village near Jumrood. The head men of the village brought up a dog for me to look at that they praised very highly. They said it was the one dog left to them, and he was very valuable at night in giving the alarm. All their other dogs had been destroyed by panthers: for whenever a dog barked it attracted a panther to the spot where he was standing barking, and the panther (or leopard) very quickly pounced on the dog and killed him and ate him up. But this one dog, the sole survivor, had gained experience from the misfortunes which had happened to his quondam companions, and whenever he was roused and gave a bark, he immediately bolted off to the opposite end of the village, thus placing a considerable distance between himself and any leopard which might have been attracted to the spot where he was barking.

And so he managed to preserve his life and remain in the village, and continue to be a most serviceable watch-dog.

Captain CURTIS : Perhaps the lecturer will tell us whether the dogs he has selected require a less amount of water than others, because setters, for instance, require an immense amount of water, and therefore it would hardly do to use them in hot climates where there was a scarcity of water.

Mr. BENNETT, in reply : Allusion has been made by Captain Curtis to the faithfulness of dogs. There cannot be any doubt as to the faithfulness of the dog under the most trying conditions, and he (Captain Curtis) gave an example of one of the most trying conditions, I think. With reference to the use either of the collie or native sheep-dog or the Smithfield sheep-dog, the dog I recommend in the paper is the ordinary farmer's sheep-dog. I do not dignify it by the name of collie, which is a higher class of dog, but perhaps not as useful. He (the high-bred collie) has not been in contact with man so much. The farm sheep-dog has lived all his life in close companionship with mankind, and he knows almost what is required of him before he is asked to do it, by gesture even ; it is not necessary to speak to him. I think the ordinary Smithfield or farmer's rough collie would be the one to employ as *par excellence* the war-dog. As to the lurcher, undoubtedly he is a good kind of dog to use ; he has speed on his side, and can retrieve, and has many things to recommend him, but it is essential that you begin to train him from the very earliest age, otherwise his natural instincts would be hares and other things of that sort, which might lead him out of the paths of duty. As to rewards, I always give a reward to my dogs after a good performance, and of course a cheery word also goes a long way with a dog. It is not wise to continue giving them biscuits and sugar, otherwise they are always on the look out for it, and do not take sufficient interest in what they are doing. After a time you can get on without these rewards. There is a gentleman (Mr. Lindley) here who, I think, could tell us a good deal about bloodhounds ; he has been kind enough to answer many questions for me on that matter. He says with the bloodhound puppy he commences by giving some dainty morsel, but after a month or two that is dispensed with, and the dog is simply rewarded by a cheery word or caress. Dr. Fleming points out that dogs trained in this country would not be of great service in other countries, especially in hot climates. That is of course a drawback to the system, but I understand from people who have taken dogs abroad that pointers and setters and other sporting dogs, although they appear not to be in such good health, yet would perform their work equally as well as at home ; their noses are not destroyed ; and I think if dogs were exported from this country to South Africa, or Egypt, or India, after a few generations they would take kindly enough to the climate, and could be used in the manner indicated in the paper. It would not be wise to take long-coated dogs to hot climates ; they should, if possible, be short coated ; but undoubtedly climate is a disadvantage to the employment of dogs abroad. The French in Algeria made use of the native dog ; we could equally make use of the dog of the country, and that would be the best method to pursue. Then the Rev. Mr. Bennett remarked that the great advantage in using a small dog is that he is not a mark for the enemy. Of course that is one of the points I have made in the paper. I did not put it in so many words, but a horse and man is an object for the enemy to fire at, but a dog being small easily escapes their notice. Unless the enemy are very much on the alert they are not much taken up with a dog roaming about, or a dog passing for a few seconds before them ; they would not probably lay much stress upon it, yet he (the dog) might be the bearer of a very important despatch, and would probably get to his destination, whereas a man and horse might not. Honestly, as I said in the paper, is one of the great points of a farmer's sheep-dog ; nothing whatever will seduce him from his duty. In Germany a shepherd will put his dog over a piece of clover to watch it, for they have no hedges in some parts of Germany. That dog will stay there the whole day, and keep the sheep from going on to that piece of clover ; and, more than that, if there are growing crops, clover, potatoes, and other things, if the shepherd mentions by name the crop the dog has to look after he will make no mistake ; he will go to the potatoes or clover, whichever it is he has to guard ; he seems to know exactly, much better than a town-bred person would know, clover from potatoes. Sir Beauchamp Walker has remarked the utility

of dogs as foragers. I did not bring that into the paper; of course dogs are most excellent foragers. I alluded to the fact that they should be employed on foraging expeditions specially as scouts and sentinels, but they could also of course be used for catching hares, rabbits, and other things. But what you really want is a dog that will not go in for game, because otherwise he would be on the look out for these things rather than doing his proper work. That is one reason why the farmer's sheep-dog is better than retrievers and spaniels, because for generations it has been bred in sporting dogs that their sole existence is wrapped up in sport, and it takes time to get them out of that way of thinking. I am hardly in a position to say which dogs require least water. Setters undoubtedly are always going in for water, and they cannot get on without it, but I think short-coated dogs generally drink less water than long-coated dogs. I think that is all I have to reply to.

The CHAIRMAN: Will Mr. Lindley tell us something about the training of blood-hounds?

Mr. PERCY LINDLEY: I am afraid I am not qualified to give much information to the meeting. The experience I have had I put before the lecturer, and I think it has been embodied generally in his lecture. The only suggestion I would venture to make is as regards the age when bloodhounds should commence training. Instead of commencing at from four to eight months I should prefer commencing at three or four; in fact, you cannot commence too early. The instinct seems to be born with them to use their nose, and if you try to keep that back you simply spoil your hound at once. I have commenced training young hounds over woodland at three months, and I find the almost innate desire to track man will altogether overcome any desire to track say a hare or deer, even doing it without any aid. You start him by letting him follow a man some 100 yards, when the man gives him a morsel of food. The next lesson he will go 200 yards, let him see the direction in which the man is going, and get his reward. At the third lesson the man will go out of sight, and in three cases out of four the dog will find his man. It is very simple, you only have to multiply that lesson, and in due time you can get him to go three or four or perhaps five miles. You can then train him to go back on his own scent. He will take out a message and will bring back a message. I have a seven-month old puppy now that does that. Again, at night he will distinguish the approach of anybody. He will tell me sometimes at 200, sometimes at 300 yards; that, of course, depends upon the wind. He will work on a down wind to 300 yards. The bark has to be done away with. You get your growl, and I suppose that growl ought eventually to be developed into simply a look. Apart from those two points, I must say I have not given the bloodhound any trials in the direction indicated by the lecturer, but so far as intelligence and faithfulness are concerned I think the bloodhound would answer most of the requirements pointed out by the lecturer.

The CHAIRMAN: Ladies and gentlemen, we are really very much indebted to the Veterinary Department of the Army. Last week we had an able and important paper read by the Principal of that Department; it certainly had not a very attractive title, but the paper when read proved to be not only instructive and important, but also extremely interesting, and it led to a discussion which elicited a great deal of valuable information from gentlemen conversant with the question before us. It also led to an important result, and that was a promise from Dr. Fleming that he would favour us on some occasion (not very far distant, I hope) with another paper on the same subject. To-day we have had a paper read which I cannot describe as unattractive in its title, because most of us—I think I may say all of us—are very fond of dogs, and we could not fail to be much interested in learning how dogs can be utilized in the various operations of war. Mr. Bennett, I think, has enlightened us on that matter in a very able way. He has told us how dogs may be used as auxiliary sentinels on outposts, as scouts during a march, and in various other ways, and he wound up by explaining how dogs may be trained for all these various purposes. The subject certainly is a novel one, but on that account it is not the less acceptable in this Institution, because I may say that we here welcome new ideas in the hope that by discussion we may be able to elaborate them into some tangible form which will lead to practical results. I am sure we are all very much indebted to Mr. Bennett for what he has told us this afternoon, and I think I shall

be complying with your wishes in tendering to him a cordial vote of thanks for what he has done.

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Friday, March 22, 1889.

LIEUT.-GENERAL SIR H. EVELYN WOOD, B.C., G.C.M.G., K.C.B.,
in the Chair.

THE HOME DEFENCE BILL AS AFFECTING THE VOLUNTEERS.

By Lieut.-Colonel F. W. HADDAN, 4th Volunteer Battalion, the
Queen's Royal West Surrey Regiment.

Introductory Remarks.

I WISH to offer a few preliminary remarks as to the reason for selecting the title I have chosen for my paper.

All are probably aware that the Bill introduced in 1888 was entitled the "National Defence Bill," and that it contained certain clauses affecting the Volunteers, which clauses were subsequently withdrawn, and in consequence has arisen the *raison d'être* of the paper I purpose reading to-day.

In any case it would be manifestly out of place, especially in an Institution such as this, for me to attempt to discuss the details of "National Defence," which includes the naval services of our Fleet, and the duties of the Army at large, subjects which I would not profess to be able to handle.

I have therefore confined myself to the question of the dropped clauses, and limited myself to what concerns the Volunteers solely, and have therefore with this view entitled my paper "The Home Defence Bill as affecting the Volunteers."

1. That great divergence of opinion exists as to the probable effects of the recent Government proposals is sufficiently manifest; but to which side of the controversy the "right" belongs is not yet by any means assured.

2. The object of this paper is, therefore, not so much to set forth my own individual views as to initiate a discussion on this very important subject, and so enable all shades of opinion to be expressed, and that in a manner not contrary to discipline and the regulations.

3. That no definite opinion of the *Volunteers as a whole* has been obtained is certain, and I cannot but feel that the abstention from agitation on this matter, one way or the other, is about the best proof of discipline and self-control that the Volunteers could have afforded.

I, myself, as doubtless many others, felt the propriety and necessity of awaiting a request from the authorities in regard to my opinion, as representing my battalion; and it is only because no such step appears to be contemplated by my superiors that I have sought this opportunity of raising a discussion on the subject.

4. I strongly deprecate the handling of subjects such as this by tactical societies, which are formed for the distinct purpose of studying tactics and practising Kriegspiel. A recent case at Liverpool affords an example of the troubles that may ensue from such societies attempting to deal with ordinary matters of a military nature.

5. We are of course all aware that there are, in our branch of the Service, several Members of Parliament who have not hesitated to express their views, and who, probably, may have considered that because the opinions advanced were *theirs*, or as representing their own particular battalions, they therefore necessarily represented the opinion of the whole Volunteer Force.

6. What may truly represent the views of a "gentleman-private" or "class" corps, may be utterly unsuited to and divergent from those of a "working-man" or "mass" corps, and the same difference of circumstances may be found in the case of "country" as distinguished from Metropolitan or "town" corps.

7. Under such circumstances, therefore, it seems most desirable that all sides should be heard, and I wish to state distinctly that I do not attempt, or wish to endeavour, to settle this question according to my own views, which I express simply as my own, and in order to found a groundwork for argument whether for or against me.

8. Whatever opinion is found to prevail would be loyally adopted by me, for I hold that the majority should always exercise their strength when their case is proved.

9. With these provisos, I will now proceed to state my views as to the wisdom and policy of the course taken by the authorities, in suggesting that the Volunteers should allow themselves to be placed under new conditions of service, as originally proposed in the National Defence Bill, 1888.

10. The first intimation received of the proposal was when the National Defence Bill was submitted to Parliament, and it contained certain clauses whereby the present conditions of volunteer service would be considerably altered. A short discussion only ensued in Parliament, when a few members of the House, who are also Volunteer Officers, gave their opinions for or against, and a few other Officers wrote to the papers; and finally the clauses were withdrawn without, as I contend, the general opinion of the Volunteers having been in any sufficient way ascertained. Thus heartburnings have been caused which might have been avoided had a somewhat different course (such for instance as a preliminary confidential circular to Officers Commanding) been adopted.

11. The authorities may, however, with some considerable show of reason, plead that they were justified in taking the course they did, seeing that in our recent Egyptian troubles they had offers of service

from several Commanding Officers to place their corps at the disposal of the authorities.

12. That they were ever seriously meant I take leave to doubt; I would characterize such offers as unsound spasms of frenzied zeal, or as an attempt to "advertise" a corps. Had an offer so made been seriously entertained and accepted, I venture to assert that it would have been found to be a mere flash-in-the-pan.

13. To offers such as these may therefore in a great measure be traced the circumstances under which the measure was introduced into Parliament.

14. Whatever the faults of the past, we have now to deal with the case as it stands, and the point I suggest for discussion is: "Would the Volunteers as a whole be willing, *and able*, to give their services in the manner suggested in the Home Defence Bill, and even if they were, would it be desirable, in the best interests of the force, *quâ* Volunteers, that they should be so called upon?"

15. As regards the personal willingness of every man in the force I have no shadow of a doubt, but as regards his *ability* I have very grave doubts, for as a business man myself I am only too well aware of the objections raised by many employers of labour to their assistants being connected with the force, and even when they are known to be so connected, not the slightest facilities are afforded, in very many cases, *if* volunteer duty at all clashes with business.

16. It is to this latter cause that I attribute the great difficulty of getting men to the ranges for musketry practice, which under present rules must necessarily take place in daylight, and therefore (except in some cases on Saturday half-holidays and bank holidays) in business hours.

17. To employers of labour, such as the foregoing, I would point out the unenviable position in which they would be, should no Volunteer Force exist; and I say, broadly, that it is not only their duty as citizens to aid by every means in their power their patriotic employés, but that, taking even the most selfish motives, it is their distinct interest to do so, for if the Volunteer Force be not supported, and greater facilities given to its members, the time may come when either the Army must be increased, or the militia ballot enforced, either of which will inevitably affect their pockets; or else a Home Defence Tax may have to be imposed especially on them, they being not only unwilling to aid in the general burden of duty to the State, but for positively acting as obstructives to others more nobly, patriotically, and generously inclined.

18. In these days of an enlightened press, and of publicity and advertisement, I venture to assert that no firm of any standing would dare to say out in the face of day that they would not allow their employés to be volunteers, even under the Home Defence Clause; but I am equally sure that there are many firms who *feel*, and *sub rosa* *act*, in this manner; and it is only exposure that will remedy this sad trait of money-grubbing before patriotism, and which has perhaps justified the remarks of foreign critics that we are "a nation of shopkeepers." I have seen it stated lately that some of Colonel

Laurie's men have had to resign, owing to their employers refusing to allow them to remain as volunteers. I should like to know the name of such firm, which I would publish in orders and in the press.

19. The foregoing is, however, but one branch of the "ability" question.

20. Volunteers are necessarily civilians first and soldiers afterwards, and probably 95 per cent. of the force as a whole are directly engaged in professions, businesses, or occupations on which they and their families are actually dependent for their livelihood.

21. To interfere *unnecessarily*, or even to give men cause to *think* that their means of livelihood will be, or even may be, interfered with unnecessarily, is a very serious matter, and it is on this rock that the Government proposals have for the moment suffered shipwreck, mainly, as I believe, by reason of the Officials not having sufficiently informed themselves of the opinions of those most interested. It is true that there was the general safeguard that no man at present in the force was obliged to go under the new Act, but only those who desired, or those now joining the force.

22. The mere *power* to call out the Volunteers as proposed is nothing, for it may be safely assumed it would never have been put in force unnecessarily; but to make this power of any practical utility, the men would have to be exercised, in peace-time, in the performance of the various duties they *might* one day have to perform in real earnest. It was therefore felt by some that this power to call out might, to a limited extent, be used as a lever to get men to undertake duties in peace-time which might be of the greatest utility and advantage to them, but which they could not readily adapt themselves to, or get their employers to assent to, by reason of the nature of their civil avocations.

23. The withdrawal of the clause from the Act cannot but act prejudicially on the force in the eyes of the general public; for although the people of all classes are so intimately connected with it, they are not aware of the whole conditions, and they will be apt to think that the Volunteers are shirking a proper duty, which the authorities have asked them to discharge, and this in the face of the knowledge they possess that a considerable sum has lately been awarded as capitation grant; and it cannot but have a marked effect, unless properly put before them, on the praiseworthy effort of the Chief Magistrate of London to raise a fund for the better equipment of the Metropolitan corps, as to the absolute necessity for which there is no doubt whatever.

24. No Volunteer worthy of the name *is* desirous of shirking any duty compatible with the due discharge of his first duty to his family and himself; and the very desire of some to show that they are not so shirking may, not improbably, lead to their engaging in a matter whereof the possible consequences may not be apparent on the surface.

25. It is assuredly no part of the Volunteer's duty to undertake the work of the Army proper, nor to oust the militia, which is the constitutional force of this country, and any steps tending in this

direction must, in the true interests of the force, be carefully watched.

26. Doubtless the authorities, with a praiseworthy striving after economy, thought the time had come, after the recent boon of 60,000*l.* a year increased grant to the force, to ask something more in return than the greater stringency of musketry practice; but the Volunteers, on their side, felt and knew that the sum granted only makes up the arrears of many years' neglect, and can only be counted as a payment *for past services and liabilities*, and as an earnest of better things to come. In that light it was regarded, and due thanks and praise have been given to the authorities for the boon they granted.

27. Supposing the clause of the new Defence Bill to be adopted by the force, I should certainly expect that my men, by adopting fresh obligations, should most certainly be thoroughly equipped and fitted in return, to take their place in the field *if and when required*. The present Act contemplates and sanctions the payment of three guineas to each man, for equipment, if called out, and I should want this money to be granted *now*, so that the necessary preparations might be made in peace-time, and the men trained in transport duties, camp equipage, the use of entrenching tools, and so on.

28. Quite enough (if not too much) has already been asked at our hands. We have given our time, *and our money*, whilst others, on whom a duty devolves also, have given nothing. It is not too much to ask, if the pressure of taxation be felt to be too heavy to warrant the increase of our standing army, that, at least, those who have borne no part of the State's burden should first be called upon to suffer in purse, if they will not in person.

29. Then, supposing the necessity to arise, by all means ask your Volunteers to make fresh sacrifices, but in so doing be not niggardly in recompensing them for the increased duties and liabilities imposed, especially when it is well known, all the world over, that the force is the cheapest (and probably ever will be the cheapest) that any country ever possessed, founded entirely from patriotic motives, and in no sense mercenary, and but for which some form of conscription, so hateful and antagonistic to an Englishman, and so baleful in its effects on our neighbours, would have to be resorted to.

30. We want no pay whatever (except we be called on active service), and we cordially sympathize with every effort made to render us better soldiers and more fit to take up and perform our duties should the necessity ever arise.

31. More especially do I appreciate the views of H.R.H. the Commander-in-Chief, expressed in the letter of service to the new Volunteer Brigadiers, that to be prepared for all eventualities we must *practise in peace-time*, and have everything in readiness.

32. How to practise mobilization, even on a small scale, is, however, a very difficult matter for us, for the *necessity* which this involves of interfering with business avocations has not been sufficiently made known to civilian employers of labour; and they would undoubtedly resent, in many cases, the desires of their people to avail themselves

of the chance of practising mobilization, because they would not appreciate the importance of the issues involved.

33. Many of the men who now go to Aldershot, or to camps and marching columns, give up their *only* holidays. Here, of course, the employer cannot interfere. It, however, speaks well for the rank and file that, in these days of express speed labour, thousands of men are found willing to give up their only days of rest to perfect themselves in their duties as soldiers. It must, however, be borne in mind, that all cannot obtain their holidays at the fixed times of camps and Aldershot (in the early part of August), and the authorities would do well to consider whether men, who are quite willing to give up their holidays *whenever* they arrive, could not be accommodated at military stations, even if only a company could be got together for the benefit of association with the regular forces, and the learning of camp routine, and outpost and outdoor duties.

34. In fact, the authorities must endeavour to make their offers more elastic and suited to the capacities and abilities of the Volunteers, for to expect or hope that any *considerable* number of the force can ever be assembled, even for a week, at one *fixed* period, shows a marked misappreciation of what the Volunteers can possibly perform. In this connection I cannot too strongly urge the advisability of having attached to the Headquarters Staff the very smartest Adjutant of Volunteers that can be obtained, so that his knowledge might be made available, and we should thus doubtless obtain many reforms, the necessities for which are unknown to the authorities, guided as they are entirely by the opinion of regular Officers, who, with the best possible intentions, have, so far as our *interior economy* is concerned, but a very superficial knowledge. I wish, at this point, to remark that I have not the slightest intention of conveying any impression that the regular Officers (to whom we owe so much, and represented as they are by our gallant Chairman, than whom a better friend the Volunteers never had) are not doing all they can for our branch of the Service. It is only in the matter of *details*, which tend to make the machine move smoothly, that I think a regular Officer who has served as an Adjutant might possibly prove of great assistance.

35. Assuming that the recalcitrant employers of labour, either by means of the public press or by the threat of a special Home Defence Tax, become more patriotic in their bearing towards the force, there would yet remain to be solved the problem of whether, in the interest of the force itself, it is desirable to proceed on the lines set forth by the authorities.

36. We have already a special Railway Corps, recruited at Crewe from the London and North-Western Railway, and another is just being formed in London; though in this latter case the additional railway companies are to be attached to an engineer corps, raised under ordinary conditions. Here we have a direct example of men serving in the same battalion under different conditions of service.

Again, in the Post Office Corps, we find the same thing. Some men actually have been on service and some liable to go, and with

the prospect of deferred pay—whilst others serve under the ordinary conditions; and no ill effects are visible.

37. Some good friends of the volunteer movement maintain that it would be fatal to its continued prosperity to establish *two* sorts of service; that is, one for “active” and one for “passive.” That example already quoted does not, however, bear out this view. I do not find that in any of these corps the men are thought more of because they can engage for active service, nor do I find in the opinion of the general public, or the Volunteers themselves, that these corps stand in any different position to the general run; whilst I most cordially support their adoption of the chances offered them to become, by reason of their special avocations, of still greater service to their country.

38. In the Army proper we find *corps d’élite*, such as the Body-guard, the Engineers, and the Royal Artillery, and to my mind it is only human nature to expect to find similar conditions in the Volunteers. I would, therefore, let every corps do as it pleases, in offering to go under the new Act, feeling assured it will be done for the common welfare of the country, and that no stigma would attach to any regiment, if it be so circumstanced as not to be able to respond as freely as others to the new demand.

39. I would, however, as I have before stated, expect that the corps so circumstanced as to undertake the new liabilities should absolutely be equipped and fitted out by the authorities to enable them to perform their new duties if called upon.

40. That *all* will respond, should ever the call of duty be heard in earnest, I firmly believe; but I would not myself stand in the way of one single man offering better service to his country, for *fear* of creating two classes of service amongst the Volunteers, especially as in the cases already quoted where a *dual* service does exist, not the slightest inconvenience is found to accrue.

41. For such corps, or such men, however, I certainly claim the greater attention and support, on the grounds of mere commercial morality. If higher duties are exacted, *and can be given*, by all means have them, *and pay for them*, according to the ordinary rule of supply and demand.

42. I shall certainly feel no sense of envy or disappointment supposing my own battalion were unable to do as much as others. On the contrary, I should know that my men, weighing their just responsibilities, either do or do not desire to undertake fresh duties; but whatever the upshot, I should feel convinced they had acted on judgment *and not impulse*, and what they have undertaken or did undertake, they would assuredly carry out.

43. It may not be out of place, in conclusion, to remark that the Yeomanry are now under the Act, and the Royal Naval Artillery Volunteers also, and they can be called out for actual service whenever the Royal Naval Reserve is called out, such Reserve being to the Navy what the Militia represents to the Army.

The CHAIRMAN: Before calling upon Officers to address the meeting I should like to refer to three paragraphs in the paper, because I do not think it is much use discussing things which are not facts. I refer to paragraphs 10, 33, and 34. The lecturer has pointed out to us as part of the last paragraph, 34, that it would be advisable to attach our smartest Adjutant to the Headquarters Staff of the Army in order that the Headquarters Staff might be closely posted up as to the feelings of the Volunteers themselves, and might be able to inform the Commander-in-Chief how much they can do and what they ought not to be asked to do. But, gentlemen, we have already got that machinery, and, I think, existing in a much more perfect form. Whether we take advantage of it is another question. We have a General Officer in command of each district, and it is their duty to do everything they can to assist the Volunteers, to become closely identified with them, and to know the wishes and wants of every corps. Assuming, for a moment, that we take our smartest Adjutant from the London Scottish, or the Artists, or the Westminster, he would only represent that one corps out of the whole district. In the district containing 18,000 Volunteers, from which I have recently come, there are many corps, and all with different wants and requirements. I belong myself to a corps which has gone into camp for six days in nine successive years. They did not find the difficulties which other corps do; but if they were factory people, and the factories had to stop work, it would be actually impossible that they could do it. If there is a mistake, as implied by the lecturer, I do not think that would be the way of mending it. I think the only way would be that we, as Generals ourselves, should take much more interest than we have done in the Volunteers. I think the lecturer has made an error in these three paragraphs in supposing that we do want any Adjutant, however smart, to inform the Adjutant-General what your wishes are; and if he tried to do it I fear he would not give you, and he would not give us, satisfaction.

Colonel HOWARD VINCENT, M.P.: Sir Evelyn Wood, I think all Volunteer Officers who are present will agree with me that the force is very greatly indebted to Colonel Haddan for having prepared so valuable a paper. He has laid his views before this meeting with very great clearness, and I have no hesitation in saying that they are views which are shared by a considerable proportion of Volunteers. As he rightly says, paragraph 14 is the most important one of his whole paper, and he suggests this point for discussion: "Would the Volunteers, as a whole, be willing and able to give their services in the manner suggested in the Home Defence Bill, and, even if they were, would it be desirable, in the best interests of the force, *quâd* Volunteers, that they should be so called upon?" I should like, with the permission of the meeting, to say one word upon that paragraph, and upon the conclusions which one may draw from it. But, in the first place, let me point out that which may not have been noticed by all, namely, that there is no such Bill now before the House of Commons as "The Home Defence Bill." There was last year the National Defence Bill, in which the clause to which Colonel Haddan has so well referred, was incorporated. The clause affecting the Volunteers was taken out of the Bill, and the Bill without the volunteer clause passed. But it is not at the present time before the House of Commons. I myself am anxiously hoping that it will be re-introduced in some form or another. In saying that, of course I am only representing my individual opinion. I must be careful not to fall into the error that Colonel Haddan suggests some of us in the House of Commons have fallen into, namely, of representing our individual views as being the views of the whole force. Having taken very great interest in this subject, and differing from some of my colleagues in the House of Commons as to the feeling of the Volunteers in this matter, I have no hesitation in saying that we are greatly indebted for this opportunity of discussing it, and we much appreciate the presence of Sir Evelyn Wood, General Fremantle, Colonel Stracey, Sir Havelock Allan, and other members of Parliament who take the greatest interest in the Volunteer Force. Personally I answer this question in paragraph 14 of the paper very strongly in the affirmative. I believe that the Volunteers would, as a whole, be willing and able to give their services in the manner which was suggested by the National Defence Bill of last year, and I think it would be very greatly to the interests of the force if they were called upon to do so. Under the present condition of things, that is, the

Volunteer Act of 1863, Volunteers can only be called upon when there is actual danger of invasion, and that would mean, I take it, when the enemy is off the coast. There is nobody who has had anything to do with the Volunteers, however great reliance they may place in the volunteer movement, and whatever confidence they may feel in the constitution of the force, who does not recognize that some weeks, at the very least, of preparation will be absolutely essential before the force can be ready to take the field. That being so, I do think it is most unwise that the country should be limited by the present Act of Parliament to calling upon Volunteers until the hour of preparation is over. I think that there would be no danger whatever if the clause of last year had been allowed to pass. No Volunteers who are now serving would be required to enter into any fresh engagement unless they were willing to do so. I feel strongly, and I desire strongly to support what Colonel Haddan has so well said, that the fear of creating two classes in the Volunteers is purely mythical. I do not think the smallest reproach would attach to any single individual who found himself unable, either from family services or professional employment and other causes, to give that greater amount of service which was contemplated by the Act. I believe a very large proportion of employers of labour in this country fully recognize the enormous advantage of the Volunteers, an advantage not only in a military capacity, but a civil and moral advantage. One firm is very much in my mind at the present time—there is no reason in the world why I should not mention the name—Messrs. Shoobred and Company, who support the Volunteer Force in a most liberal and generous manner, who equip and support a company entirely at their own expense; who rent a range for it; who engage instructors for it, and do everything they possibly can to promote the efficiency of this company—doubtless, in some measure, from patriotic motives, but also, I am quite sure, because they believe, and their experience teaches them, that the very best men in their employ are those who devote their leisure time to physical development rather than to the dissipating amusements which are open to them in other channels. And if I mention the name of this firm it is by no means because they are superior to other industrial firms—for there are numerous business houses, not only in London but in other parts of the country; in Yorkshire I know several, in Sheffield several, who take exactly the same view, that the healthy recreation of their employés is a matter to them of very serious consideration. They know it is much to their advantage for their men to have their emulation fired, their honourable ambition aroused by military exercises, rather than that their energies should be sapped by pleasures impairing their efficiency for business. Now upon this National Defence Bill of last year I took the opinion of several large employers of labour—some of the largest firms in Yorkshire, employing 10,000 and 12,000 hands, and from all I received the same verdict—that they did not see anything in the provisions of this Bill which would prevent their retaining the services of any single individual. Holding, then, the views which I do, knowing from personal experience and from having taken, in some measure, the feeling through the Captains of companies of the Queen's Westminster Volunteers, which I have the honour to command, it was upon that ground I strongly supported the volunteer clause in the Bill last session. I hope that there may be a full and free discussion, and I have extremely little doubt that the result will be to show that this meeting and a very large proportion of the Volunteer Force cordially agrees with Colonel Haddan, and is most anxious to support the Secretary of State for War, and our most excellent friend General Fremantle, the Deputy Adjutant-General, in every step, in every measure which may be undertaken to improve the efficiency and increase the utility of the Volunteer Force.

Major W. E. HEATH : I have been, Sir, for rather more than twenty-nine years in the force, and from my experience I believe that you cannot ask the Volunteers for more than they are ready to give, within their ability. I am only going to speak on one point on this occasion, as I agree with the lecturer on all points. I believe that no Bill introduced into Parliament would be perfect unless provision were made in it for the wives and families of men whilst engaged on active service, or away from their employment, as well as a provision for the results of active service when your men are killed or wounded. We must remember this, that men taken for active service would be taken away from their employment, and there is no doubt that

90 per cent. of the Volunteer Force are mechanics, or employés of one sort or another, entirely dependent, with those belonging to them, on their earnings from week to week. The Government must look this fact in the face, *that in the absence of the breadwinners of the families, they will have to provide for those families.* I am perfectly certain of this, that it would take all the go out of the men if they knew that whilst they were fighting for their country their families were left dependent on charity of any sort. Those wives and families must feel that they are entitled to demand support from the Government, and the men must *know for a certainty* that their families will be taken care of in their absence by the 39 millions—for that is what it comes to—of the stay-at-homes, and the amount of allowance settled beforehand by Act of Parliament, thus giving the men the option of resigning during peace if the terms were not satisfactory. I have nothing further to say; I know for myself what I should do, and I know from thousands of men who have passed under my control during nearly thirty years, what would cement their patriotism, and I also know that you could increase your force by hundreds of thousands if you would only have something definite on paper, so that a man who volunteers might know that when he left his employment and his home to defend all the rest of the people who *did not go away*, and all the property of *which he owns so little*, he should be assured that those whom he left at home would be properly cared for, and not treated as paupers, or left to the tender mercies of the broker or relieving officer, or relegated to the workhouse.

Colonel MACFIE: I rise with great diffidence to speak in such an audience as this, but I may say I joined the Volunteer Force in 1859, and have had, I think, as much experience as anyone in this room. For nine years I served as a private, and for the remainder of the term I have been an Officer, and for seventeen years a Commanding Officer. I entirely dissent from the view put forward by Colonel Howard Vincent, and my reason for doing so is explained in the 20th paragraph of the paper read by Colonel Haddan, namely, that "Volunteers are civilians first, and soldiers afterwards," for that is what the War Office and the authorities are very apt to forget. It is all very well to say that when they are called out for active service those who remain at home should pay for their wives and families, but I have known many cases of men being asked to resign their employment because they went for a week into camp. Such cases do occur. Colonel Howard Vincent spoke about large employers of labour, and mentioned the name of Messrs. Shoolbred. Of course it is very patriotic of Messrs. Shoolbred to pay what they do, but I think they should not be called upon to do it—no one should be called upon to put his hands into his pockets in that manner. The country generally should provide for the Volunteers, and it should not be left for private firms to do it. It is all very well for large employers of labour to take such steps, but take the case of the small employer, who has but two hands to do the whole work. One of them goes away for a week's camp, and the other is left to do the work. Then if he goes against the will of his employer he is turned out of his employment or threatened, and he cannot go to camp. I think the difficulty is very great, and we ought to recognize that the men are civilians first and soldiers afterwards, which we do not sufficiently do at present. I am not at all criticizing Colonel Haddan's paper, because in my experience I never came across a paper written so much in the interests of the Volunteers as this one. I may mention that I have pointed out to Colonel Haddan a mistake occurring in the 4th paragraph, which he has promised to set right.

Major TODD, Middlesex Artillery Volunteers: The question before us, I take it, is the defence of the United Kingdom, and therefore I hope you will allow me to range a little further than other speakers have done in maintaining that the very first thing that should be done is the strengthening of the Navy, so that our food supplies may be all right. At the same time, seeing that it will take three or four years before we can get the vessels that are required, is it not madness on our part to leave our people unprepared for war, or to defend their country from invasion? Are we going to be disgraced again, as we were in the Crimean War, having to hire German soldiers to come here and defend our women and children? I think it was the most disgraceful thing I ever saw in

¹ A misapprehension which was corrected by the Chairman.—Ed.

my life. I remember when I went with my father to Folkestone I saw German soldiers doing Englishmen's duty. I said to my father, "Who are these men?" I had been used to seeing our long-service soldiers there, but when I saw these men I was astonished. My father said, "These are German mercenaries." I replied, "I will do all I can when I get to be a man to alter that state of things," and I have been trying to do so since. That is why I joined the Volunteer Force thirty years ago, and assisted in forming what is now a very large battalion. I brought my sons up in the same way; they were both commissioned when they were seventeen, and passed through Woolwich and Shoebury. I then took them to the infantry barracks of the Coldstream Guards to serve their time there, so as to be able to drill their men, for I don't believe in Officers taking their men in Hansom cabs, when ordered to march them from one part of town to the other, but believe they should be able to train their men at infantry drill, and so move their men as infantry, as well as at their artillery work. I then passed them through the cavalry, so that you see I have some strong motives in speaking in the way that I do at the present moment. You will excuse my warmth if I say that I do not consider an Englishman is worthy the name of an Englishman unless he belongs to some service. When we started the Volunteer Force we worked hard; we trained our fellows in boxing, fencing, and in riding, so that we were able to get up the Royal Military Tournament, which I had the honour of promoting with General Burnaby, some ten years since, and which has done so much towards feeding and schooling the orphans and widows of our soldiers. I hope the women of this country will refuse to have anything to do with men who will not only say they are prepared to defend their country if it is attacked, but will prove that they are prepared to defend it by the practice and study of drill and of the science of war, the same as a man should be able to box in order to defend his own women and children. That is my way of looking at it. We are coming to the times of the survival of the fittest, and it is time the House of Commons looked at this question from that strong point of view. Instead, we have the waste of time which is going on in the House at the present moment, and which is a disgrace to the country. Unless we are back to back in this matter we shall be like the single reed, and not like the bundle of sticks. "A house divided against itself will fall," therefore all classes of the community should work together to see that the country is prepared. Never mind the expense! What has the Treasury to do with it? We are the taxpayers; we have been giving our time to the Service. We have been told that Messrs. Shoolbred give money to support their company; God forbid that this should happen in my regiment! I would refuse to find the equipment. It is a disgrace to the nation that we should be called on to equip our men. We are not beggars, and will not accept charitable contributions; let the country find the guns and equipment, with ranges, &c.; we give the time and labour. I say the whole of the Volunteer Force should be first equipped, and then the Navy can go on building in the meantime. Why should we be protected by the Navy? As Englishmen we are not worthy the name if we are not prepared to defend our shores. In case the Navy got the worst of it, as might happen, and the enemy come on shore, then how shall we protect our shores? There has been an immense amount of talk about defending the heart of the country, meaning London, by two army corps. We see these two army corps on paper, but we have never seen them on the ground. But even supposing there are two army corps to defend the heart of the country, I defy those two army corps to defend our shores. When I was a pupil of Langham's, and also practised with fencing masters, did they tell me to defend my heart as the only part of my anatomy to be defended? Certainly not. They taught me to defend any part of my anatomy that might be attacked to the best of my power, therefore we must be prepared to defend every part of the anatomy of our country in the same way. You must equip your men, you must do all this sort of thing. And then look at the good effect the practice of drill and discipline has upon the men themselves. It has done a great deal of good; many men who would have been very bad characters are now first class men, simply through passing through the Volunteer Force. And then look at what these men are able to do. I don't say it out of mere brag, but this year I took the Silver Cup with eighteen of my young men, that I had only had two years in my battery. They took it for exercising a 40-pr., although we had to compete

against the arsenal men who came from Woolwich. I say if you will only train these men you ought not to put them to a penny expense; it is good enough for them to give up their time and their leisure, and to go and do the work, and prepare themselves to defend the country. We are told that the country is in danger; each party in politics tells us so; each party in the country tells us we are dependent on the Navy. They say you are in danger. This would not be the case if the public would only look at the question calmly, and if it were put before them by the authorities in a clear and sound manner, that every man, I would say every male above sixteen years of age, capable of doing duty, should be called upon to join the Volunteer Force, and pass as efficient. The fact of having to do twenty drills a year is no great hardship; my men do 100, and I do it with them. If everyone should be compelled to do twenty drills a year, and to pass also for shooting, you must then have butts all over the country, the same as our forefathers had at the doors of the people. I don't mean a single butt, like that at Wormwood Scrubs, where they put a prison at the end of it to stop shooting there. I say you ought not to abolish a single butt, but you should increase them all over the country, where the people may go and have some practice before they set out on their work in the morning, or after they get home from their work at night, because I find that the men are willing to get up at five o'clock for the purpose, if they get the chance. We must make every man pass his examinations in drill and in the use of the Morris tubes, and get the butts in the meantime. If you will only do that, we shall always be able to meet our enemy. Let the Army go abroad, let them go to our coaling stations, Colonies, send them anywhere you like, because we should have our men ready at any spot that might be attacked; we can defend our own shores, and if we cannot defend them, we deserve to lose them.

Lieutenant-General Sir HENRY HAVELOCK-ALLAN, V.C., M.P.: I have been very much struck, Sir, by some remarks which fell from the last speaker, and in nothing do I agree with him more entirely than in that which I have ascertained by my own experience, that the time has almost come when you have got to the limit of what the Volunteers may be expected to do as to putting their hands in their pockets. I believe that there is no limit whatsoever to the patriotism and the good spirit that they display, and also the extent to which they are anxious to avail themselves of every possible opportunity of military instruction. During the short time that I have had the honour of holding my present post I have found that there are no difficulties raised on the part of the Volunteers, although there may be on the part of the authorities, who to a certain extent do not appear to appreciate as much as they might do the advantage of placing facilities in the Volunteers' way which the Volunteers themselves desire in order to make themselves militarily efficient to any extent possible. It is in connection with that that I should like to say that I think the fact has not sufficiently impressed itself on those in authority that the time has now definitely come when, if the Volunteers are to take part in the organization of this country for national defence, when the regular forces may be withdrawn under any circumstances, such as the last speaker has foreshadowed, you cannot expect the Volunteers or their Officers or supporters to do much more pecuniarily than they have already done. Men and Officers are ready to give their time and their leisure, they contribute greatly in money also, but I think, if they are to be organized, as we hope they are, effectively as field brigades, one of the first steps towards that should be that the Secretary of State for War should recognize that every article of their equipment ought, as far as possible, to be supplied to them at the expense of the nation at large. How is it possible, for instance, for their carriage to be organized so that they can go out and move in brigades unless a little more liberality is shown in the matter, and inducements are held out to people to provide the men with the necessary horses and carriages? As regards equipment, one difficulty is that you cannot absolutely in certain months get the battalions in brigade together at all, simply because they could not undertake the railway journey because they have no great coats. You cannot ask a man to sit for hours in a railway train in winter without a great coat. Then in the matter of leggings, and boots, and ammunition-pouches, and other facilities for carrying ammunition. I think all those things are matters of absolute necessary equipment and ought primarily to be supplied by the Government itself. As regards one point, perhaps Colonel Hadden would

permit me to say I think he has fallen into some error. Without speaking of a matter which might be supposed to be secret, I was one of those entirely opposed last year to the National Defence Bill in the shape in which it at first stood: and although I for one did not oppose the Secretary of State for War upon it openly, I had no hesitation in expressing to him the views which I know are held by a great part of the Volunteers in the North of England, namely, that if the compulsory clauses as they then stood had been carried out, the effect on the Volunteer Force would have been that they would probably have led to the disbandment of half the force. I think Colonel Haddan goes to this point, that under a future modification of this Bill—which we hope may be brought in, perhaps this year or the year after, when the authorities have had more experience of the responsibilities of volunteers under the new organization into mobile brigades—some of the offensive and harmful features of the late Bill may be struck out, and a better Bill framed. The first step towards that is, that it shall be done in accordance with the wishes of the Volunteers themselves. I should like not only to ascertain, if possible, the opinion of every Commanding Officer, but also of every Officer, and almost every individual man. I may say that I myself, when the Bill was first introduced, suggested to the Secretary of State for War that it should be suspended for the present until he had asked every Commanding Officer of every corps in the kingdom, by circular, exactly what the men would think it right to do, and what they would think beyond the limits of what they should be called upon to do as Volunteers. I believe, if the Bill had been passed upon information obtained in that way in the first instance, there would have been no difficulty at all in its universal application throughout the country. I deprecate in the strongest possible way the idea that Volunteers should in any way be treated like the other defensive forces of the country. They are, in the first instance, civilians before they are soldiers, and the only way of getting the utmost voluntary efficiency out of them is to make your system applied to them as flexible as possible, and to endeavour to enlist the active co-operation of every man by suiting your military circumstances to his particular individual circumstances. Then as regards the future, I trust that that course will be pursued, and that the authorities will at each step proceed by first ascertaining the individual opinion of the men, because it must be recollected that a Volunteer Force is not composed of Officers alone. The *man*, after all, is the individual unit that you want to get at, because if he does not choose to come out he won't come out. I hope further steps will also be taken as to supplying qualified Staff Officers for the mobile brigades. The suggestion made by Colonel Haddan that a smart Adjutant should be attached to the Horse Guards is, I think, not necessary, because we have already the Inspector-General of the Auxiliary Forces, who has at his disposal the very best practical information as to every brigade and Division, and every individual regiment; and I trust one of the steps that will be taken will be to supply each of the brigades with a thoroughly qualified Staff Officer—not necessarily regular Officers—but if in some cases it may be found that the volunteer Brigade-Major would be the best Brigade-Major, at all events the very best qualified Officer should be attached for the onerous duties of the Staff to each brigade, which demand a set of qualities which it is almost impossible to unite in one man. Anyone connected with Volunteers knows how very desirable it is that their rough points should not be touched, and that in developing their military form they should be led rather than driven. I thank you very much for allowing me to make these remarks. I know I am representing the views of other General Officers in the same position as myself commanding volunteer brigades, that they desire to have every possible information from the individuals composing those brigades, and hope that the information that may be gathered in the next few months may lead to making our Volunteer Force more effective than it is at present, and will carry with it the voluntary co-operation of the great body of Volunteers for the great work of national defence.

Colonel HUMMEL: I think we are greatly indebted to Colonel Haddan for giving us the most favourable opportunity for discussion that Volunteer Officers have had for some time. For my own part I was strongly in favour of the retention of the volunteer clause in the Defence Bill of last year. I felt it was a great promotion of the Volunteer Force that it should be so included, and that a great blow was

dealt to it when it was struck out. I do not myself believe that any man who enrolls himself in the Volunteer Service would consider, for one moment, whether such a clause would affect his future prospects. I think he enrolls for the pure love of soldiering. I think also that we are perhaps apt to overlook what the condition of the country would be supposing such a clause ever were put in force. Where would business be in the case of threatened invasion? Would not the whole commercial arrangements of the country be entirely upset? Would not the nation be seized with a military *furor* which would induce men to throng the military centres and enlist wholesale? I think there is not the smallest fear in the world that the Volunteer Force will be affected in any way in strength except favourably by the replacing of such a clause in the Defence Bill. I should, therefore, strongly advocate that some steps be taken by the representatives of the Volunteer Force in the House of Commons for the immediate re-introduction of some such clause. I do not say a compulsory clause, but that power should be reserved to call out such portions of the force as would be able to go out on these occasions. There would in such a case be no invidious distinctions. I might not myself be able to go out, but if any one in my employ, who, I could spare, wished to go, I would readily let him take those duties which he might be called upon to perform in the absence of the regular Army. That I believe is the *raison d'être* of our existence, and therefore we should have every opportunity provided for us to exercise ourselves on these occasions. A very large proportion of the force would be able to go out in the event of an army corps being called abroad, and they would be relieved from time to time; but really I am quite certain that if such powers were reserved it would not affect the Volunteers further than to improve their status in public opinion. Now, with regard to the question of brigade organization, I think it is a very grand step and one which ought to have been taken long ago. It is simply what was wanted. It is an initiatory step, but it is one of enormous importance, and can be carried out with very little trouble and with no expense whatever. Colonel Hadden puts his finger on a great defect in the Volunteer Service, viz., the want of knowledge of the requirements of the Service at Headquarters. I suggest, with all due deference to the Brigadier-Generals, that this might be done through the brigade organization. It was impossible to help, under the circumstances, the very great variation of conditions under which the Volunteer Force was formed. But military bodies require uniformity, and the variations in equipment, in discipline, in command, and in everything connected with the corps are enormous in the Volunteers of to-day, and they counteract, to a great extent, the efforts of the authorities to produce any uniform action. I take it it would be easy for Brigadiers—although it would require some considerable increase in their Staff—to keep in daily touch with every regiment, to ascertain exactly the whole of the details of their interior economy; to know, as well as the Commanding Officer and Adjutant himself, the ins and outs of every regiment, and, as far as possible, to put their discipline and interior economy, and even their financial affairs, on an equal footing. Through them the authorities, the higher authorities at the War Office, would know what regiments are wanting, as to details of equipment, and the various difficulties regiments suffer under for want of drill ground, want of shooting accommodation, what regiments are able to do certain drills in the year, to go to Aldershot, or so on. Every effort should be made to introduce one uniform system. Why should one regiment be able to build handsome quarters while another has to drill in the street? Why should one regiment have a splendid rifle range close at hand when another has to go 20 miles out? All these questions are mere matters of trouble. It is not a matter of expense at all. A mere Act of Parliament would produce the ground for rifle ranges. We have miles and miles of ground on the river marshes, for instance, on which rifle practice could be made; a mere Act of Parliament could enforce the purchase of ground which would produce a range, and the Volunteer Force would be only too glad to repay the Government by a rent. The same thing may be said with regard to drill-grounds. A mere Act of Parliament would be required for the acquiring of property in London to accommodate the various regiments according to their necessities, and they could be repaid out of the Capitation Grant. I am sure I am quite right in saying if anybody would take the trouble—that is all it wants. That having been done, we should get one

step towards a complete army. As to transport and great coats, we do not always want to carry great coats, but we should very much like to know that we could always get them when they are required. We do not always want to be followed about by carts and that sort of thing, but we should very much like to know that they are forthcoming when required. I do not see why regimental Commanding Officers should be required to make inquiries as to whether carts could be obtained if wanted; why should not that be done on a system from Headquarters; why should not they be apportioned to us when we are called out? I think it would be such a very easy matter—it only wants somebody in high authority to move in it.¹ There are many other difficulties which I cannot go into which would be overcome in that way. Let us take the question of the want of Officers. To my mind, to a large extent, it is caused by the Service not being good enough. So much is required and so little given—and really it is getting harder and harder every day. I do think that if steps of this kind were taken, and we were made to feel that we were a real actual force, not doing just as we like, one regiment having beautiful headquarters where they can hold dances every night, and another regiment having no headquarters at all; if it were understood that there was one uniform system, that we all had equal accommodation and advantages, and that if we did not all do well alike we should be dealt with accordingly, the public would then know that we were a good and valuable force, and certainly we should be well officered.² It is a most melancholy thing to see a Secretary of State for War stand up in the House of Commons and say that from various reports he had received, some volunteer regiments were good enough to be put alongside regiments of the line, and others could not be trusted to face a disciplined foreign army. Why should that condition of affairs exist? Who is responsible for it? Is not the Secretary of State for War himself responsible? I do not know anyone else who is. I think by the exercise of common-sense all these difficulties might be got over, and the Volunteer Force would thereby be greatly benefited.

MR. J. R. MACDONNELL: Might I say one word with regard to an observation that fell from Colonel Hummel? He said the dropped clauses would not be objectionable because the country would be in a peculiar state of ferment at the time that would come into operation. The position of those who, like myself, opposed these clauses was, that by the conditions they might *legally* be put in force when the country was *not* in such a condition of ferment.

Colonel BLUNDELL, M.P.: There is a point that has come under my notice, having the honour to command one of the volunteer brigades, and that is the difficulty of getting anyone in the country to take the initiative in getting up a fund to obtain the equipment to complete the different regiments. The Lord Mayor of London has shown his appreciation of the necessity of the Volunteer Force being equipped. He has passed Temple Bar in taking in the metropolitan Volunteers; and if a case ever arose in which the metropolitan Volunteers were used, the volunteers of the country would also be required. I would therefore strongly urge the Lord Mayor to make the fund he is raising a national fund. As far as I could judge, I think it would cost probably something between half a million and a million to complete the equipment of the Volunteer Force—that is, less than the cost of one ironclad; and if our force was properly equipped—even if we were to look upon it from the naval aspect that has been so much spoken of—it would free our Fleet to an extent that would be far more than the value of a single ironclad. I am anxious to urge that strongly, because I find in the country while people are

¹ It appeared from the observations of the gallant Chairman that I did not make myself clear on the subject of transport. I hold that it should be organized by the War Office on a wide and comprehensive basis, the whole carrying capacity of the country being registered and apportioned to districts and regiments.

² The report omits some remarks by which I meant to convey the opinion that from the peculiar conditions, chiefly traditional, but largely existent, of the Volunteer Force, the position of an Officer is not endowed with such a degree of distinction, in comparison with the other Services, as to counterbalance the great and increasing work it demands.

friendly disposed towards the equipment you cannot get anybody to take the initiative. There is another point I am anxious to say a word upon, and that is this question of the clauses in the Defence Bill of last year. I think they want to be more thoroughly understood by the Volunteer Force. My impression is the Secretary of State for War was anxious to take a power, but that the Volunteer Force might have trusted him not to have exercised that power in an improper way. Because, you must recollect, you can only call the volunteers out in case of actual or apprehended invasion. Well, it might be very objectionable to a Government to have to say they apprehended invasion: if they did, the Government would not like to have to say so: therefore it wants something more. Now, what was suggested to me—and what appears to me to be right—is that a Government ought to have the right to embody the Volunteer Force if they are prepared to announce on their responsibility, as a Government, that they will bring in a Bill to suspend the "Ballot for the Militia Suspension Act." This would show the country that there really was a crisis which required the Volunteers to be embodied. If that Act were suspended every rich man, or in fact everybody, would feel that he was liable to serve in the militia, and that therefore it was necessary for him to do his utmost that the Volunteer Force which came forward should feel secure that there should be separation allowances for families, and that funds would be got up. I think if the Government, upon its responsibility as a Government, was prepared to declare that the Ballot Suspension Act for the militia ought to be suspended or repealed, that then you would find you could use your Volunteer Force, that then you would find the Volunteer Force would come out, and no one would suffer; and if the Volunteer Force were properly supported by localities—localities who so supported the Volunteer Force might thereby prevent the necessity of the militia ballot being enforced.

Major BARRINGTON FOOTE, R.A.: I had not the slightest intention of speaking this afternoon. I have myself had nothing whatever to do with the Volunteers except that for some few years I used to go down on the Staff to Wimbledon, and I remember those times with very great pleasure. I wish, however, to show good comradeship on the part of the arm to which I belong. I am sure none of us in the regular Army wish the Volunteers to think that in any great question of this sort they are left entirely to themselves; and I am further sure I am only expressing the feeling of my brother Officers of the regular Army in saying that that is not the case. We take the keenest interest in matters concerning the Volunteers and all that has to do with their progress, organization, and efficiency. One point brought forward by two or three speakers is that there should be plenty of rifle ranges and plenty of butts spread all over the country, so that it would be easy for Volunteers to go out and practise rifle shooting before or after their regular day's work. That is no doubt greatly to be wished, but it is very difficult to attain. The firearms of the present day have increased this difficulty. I belong to the Royal Artillery, and it may surprise many to hear the range required for the guns of my own battery (12-pr. B.L.) is such that we have only one land-range in the whole of England where we can practise, and that is on Dartmoor, at Okehampton. We used to have other practice grounds, but they are useless for this new gun. By that I do not mean to say the actual range we are firing at could not be obtained, but that is not the only question. It is the ricochet shot, where the shots may go on to. So then you have to consider for long-range rifles, with very flat trajectory, not only the butts but the whole country. That is one difficulty in obtaining numerous rifle ranges. It is true you do not want the ranges as extensive as we do for cannon, but still modern rifles and modern musketry do make it much more difficult to get ranges which give sufficient country beyond, unless you have precipitous hills or cliffs at the back.¹ The sum total—the essence of what most of the speakers have been advocating—is simply money, more money. Nobody has said that in so many words, but that is what it comes to. I am sure everybody wants the Volunteer Force to be as efficient as possible, but that efficiency must touch

¹ I am alluding, of course, to practical work, such as *firing* other than independently and at unknown ranges not only where individual—and individual firing alone—is practised.

finance. Whether it is a question of equipment, or of rifle ranges to be bought, or butts to be built, of transport, or of providing for the families of those who may possibly at some time be crippled on active service—every one of these points means outlay. Most of them mean outlay *now*. Equipment, butts, ranges, transport—that means money at once to be voted, and we know that this must come before the House of Commons, and we also know very well that a great increase of the Budget, unfortunately, either for the Army or Navy, is not received with entirely unanimous approval in that assembly. My opinion is that any Government—I do not care which party is in power—would be unwilling to ask for a large extra expenditure, absolutely necessary as it is, unless they felt that the public were on their side, and that such an expenditure would be popular with the people generally. Of course it would be popular with us. After all, it seems to me that it is partly in the hands of the Volunteers themselves to *convert* the public. A little leaven will leaven a whole lump. You have a very large leaven in the volunteer body, and if the whole of the Volunteers will set to work to convert the British public to the absolute necessity of this extra expenditure, it might then be brought forward with confidence. I am not advocating public speaking, but quiet talking together over the fireside. If the whole of the Volunteers in the British Isles were really honestly to set to work, each in his own circle, I venture to believe the whole of the taxpayers of England might be won over. The Government would be perfectly well aware of this conversion of the public mind, and then, and then only, would it be willing to ask for such a large extra outlay as would be necessary.

Colonel HADDAN : There was one mistake I made in Clause 4. I said, "A recent case at Liverpool affords an example of the troubles that may ensue from such societies attempting to deal with ordinary matters of a military nature." I was informed officially—I may say semi-officially—that a certain society had been censured for some of its junior Officers mixing themselves up with the formation of a marching column at Easter. I have since been informed that the General commanding that district received an explanation from the Volunteer Officer of the district, and he stated that he was perfectly satisfied with the explanation that that Officer afforded. It is only an act of justice to say that I made the statement in perfect good faith. I was not aware at the time that the censure had been withdrawn—even if it were given.

The CHAIRMAN : My remarks will be very brief. I may say, offhand, I think almost every soldier agrees in substance with what the lecturer has stated—that the country has hitherto asked far too much of the Volunteers, and done far too little. I think everyone agrees to that. But, gentlemen, it is in your own hands. Every now and then you have an election; you send people to the House of Commons. If you would concern yourselves a little less whether he is a Tory or what is called a Liberal, and concern yourselves a little more about the defence of the country and the Volunteers, it would be better. I enjoyed immensely the eloquent speech of Major Todd. He has depicted rather a sorry aspect of things: my only consolation is that he and men like him have done so much to retrieve the negligence of the lazy ones. With regard to his experiences when he was young, with regard to the Germans, it is no doubt true that the Englishman, well paid at home when the country is in a flourishing state, does not care to go abroad anywhere. There are, besides, only a limited number of us; and those Germans, who irritated him when he was a little boy, were hired for the Crimea; and I believe we only brought them home here to England when, as usual, having started too late, the Crimean War was over before they arrived. I was interested in telling you that because we did not enlist the Germans to defend England. His suggestion that we should enlist the ladies on our side was carried out to our great detriment in 1881, for there is a country with which I had something to do, in South Africa where they appeared to have carried out his suggestion literally. There were three girls married on the morning on which we signed the Peace. I saw those three girls, and they had been waiting from before the outbreak for their marriage; but they said, "We do not want to marry till the war is over." So that that suggestion has been carried out by a race which we, unfortunately, once too much contemned. I think Colonel Hummel made a mistake in talking about the transport. He said we should find

it. Well, I have found that you men of business do your business much better than we do. We are finding the transport, because we give you the money. In the district from which I have recently come, every Officer who has been offered a sum of money has told me verbally, and officially on paper, that with the allowance the Government has given him, he could find the transport. There has been a complaint about great coats. Many corps have great coats, but if you are approaching the Secretary of State for War and asking him for money, you must expect he will be a little inquisitive as to what you do with your Capitation Grant, as to whether it is given away in prize meetings or as to whether it ends in inducing the men to go into camp. You have to consider that. I think you do not get nearly enough. I have said so publicly and privately. I have kept the cream of the thing for the end. I consider the City has behaved rather worse than all the rest of England—with regard to the Volunteers. I scarcely know anyone in the City who has come forward in the way in which the country gentlemen have done, and the City has seemed to have not the slightest interest in you. Well, I am happy to say, with the present Lord Mayor, we have fairly turned the corner, and we shall all be now too grateful to the City for what they are doing. I will, with your permission, read this paper: "The Lord Mayor would have been present to-day but is detained at a special meeting of the Corporation. He proposes to raise a fund of 100,000*l.* for the metropolitan corps." He states "that this movement is already spreading, and several Mayors of large provincial towns are following his lead." It only remains for me, in your name, to thank the lecturer for the interesting paper that he has read to us.

Friday, March 29, 1889.

SIR THOMAS CRAWFORD, M.D., K.C.B., Q.H.S., Director-General,
Medical Department of the Army, in the Chair.

THE SOLDIER'S FOOD, WITH REFERENCE TO HEALTH
AND EFFICIENCY FOR SERVICE.

By J. LANE NOTTER, B.A., M.D., Surgeon-Major Medical Staff; Professor of Military Hygiene at the Army Medical School, Netley.

I HAVE the honour to speak to you this afternoon on the soldier's food, a subject which has recently received more than ordinary attention from members of the military Service as well as from the public press. And the reason for so much attention having of late being drawn to this subject is not far to seek, if, as I believe, the importance of the food ration of our soldiers has been heightened by the action of the short-service system of enlistment. This system has contributed largely to the youth of the Army.

If we take the effective strength and comparative statement of ages of non-commissioned officers and men of the British Army serving in India from 1876 to 1885 inclusive, the results show an annual average of 769 lads under 19 years of age, and 960 boys between 19 and 20 years of age.

Or, again, we find in the "Army Medical Reports for 1886," that the average age of 73,456 recruits inspected in that year was 19.5 years.

The recruit at 19 years of age has not only to work, but also to grow and develop. "At this most critical period of life," as Sir Wm. Aitken remarks, "recruits can be brought under judicious training, when they ought also to have precisely the amount of exercise and the amount and kind of diet best fitted for them." In the absence of this, there is a thorough breakdown—so important a factor is food in the ultimate development and staying power of the soldier.

It is a universal rule in Nature that where work has to be performed, either by man or animal, the food must be in proportion to the labour. "Food is the source from which muscular force is derived, and hence the supply of food should be in proportion to the amount of work that is to be performed."

Now, work is most conveniently estimated as so many pounds or tons lifted 1 foot high, and for much of our information on this point we are indebted to the Reverend Professor Haughton's experi-

ments. This gentleman has shown that walking on a fairly level road at the rate of about 3 miles an hour is nearly equivalent to raising one-twentieth part of the weight of the body through the distance walked. An easy calculation changes this into weight raised 1 foot, and in this country muscular work is expressed as so many tons lifted 1 foot high. His formula is as follows:—

$$\frac{(W + W') \times D}{20 \times 2,240},$$

where W is the weight of the person; W' the weight carried; D the distance walked in feet; 20 the coefficient of traction; and 2,240 the number of pounds in a ton. The result is the number of tons raised 1 foot. (To get the distance in feet multiply 5,280 by the number of miles walked.)

The following table, taken from Parkes' Hygiene, will show the amount of work a soldier performs under special circumstances, assuming him to weigh 160 lbs. with his clothes:—

Kind of exercise.		Work done in tons lifted one foot.	
Walking	1 mile	.....	18.86
"	2 "	.....	37.72
"	10 "	.....	188.60
"	20 "	.....	377.20
"	1 " and carrying 60 lbs..	.....	25.93
"	2 " " " "	..	51.86
"	10 " " " "	..	259.30
"	20 " " " "	..	518.60

An average day's work may be roughly stated as equal to 300 tons lifted 1 foot. 400 tons is a hard day's work, and 500 tons an extremely hard day's work which few could keep up continuously.

It is true the soldier has not a 10-mile walk every day, but he has his ordinary drill and gymnastic exercises, along with fatigue duties. His drills are a series of movements that are constrained, and his dress, unfortunately, does not admit of that free play of his muscles which is so essential to their most efficient action. Besides, he is not at liberty to regulate his pace according to his pleasure or condition at the time, and all this is really equivalent to extra labour in its fullest sense.

I have already said that the source from which the force, or in other words the power for muscular movements is derived, is food, and the way in which food acts is concisely stated by Fick as follows:—

"A bundle of muscular fibres may be looked upon as a machine consisting of albuminous material, just as a steam-engine is made of steel, iron, brass, &c. Now, as in the steam-engine coal is burnt in order to produce force, so in the muscular machine fats or the hydrates of carbon are burnt for the same purpose. And in the same manner as the constructive material of the steam-engine (iron,

&c.) is worn away and oxidized, so the constructive material of the muscle is worn away." Such is Fick's explanation. Moreover, experiment has now fully established the theory that heat and energy are manifestations of the same force, that the property to convert latent heat into mechanical motion is inherent in the muscles themselves, and that the manifestation of this property is determined through the nervous system. Nervous impulse is converted into muscle impulse, and as a result, mechanical action follows, for the close of the latent period of muscle impulse is succeeded by a wave of contraction.

All the motions of our hands are performed by the contraction of our muscles; they all depend on the property of our muscles to contract if they are excited by our nerves.

Now let me repeat: every manifestation of energy, whether movement, heat, or nervous action, has its origin in food.

I have next to say a few words on food in its chemical relation. Professor Baron von Liebig divided foods into three great classes, and although we no longer accept his interpretation of the way in which the various foods are subsequently split up and utilized in the body, we retain his classification on account of its simplicity, convenience, and practical accuracy.

His classification is—

1. Organic nitrogenous substances. . . Albumen, fibrine, gluten, &c.
2. Organic non-nitrogenous } fats } stearine, butter, &c.
 substances } starches } wheat flour, &c.
3. Inorganic salts.

1. *The Nitrogenous Substances.*

These, as their name implies, consist of a group in which nitrogen is largely present. They are represented by albumen or white of egg, by the albuminous principles of meat, milk, and blood, and also by the vegetable albumen or gluten of flour, peas, lentils, &c.

Now what is the use of this class in foods? In the first place they readily afford the requisite materials for the construction, maintenance, and repair of those parts whose chemical elements are similar to their own, and especially of the muscles.

It is to these nitrogenous substances that we must look for the repair of the waste of tissue which occurs in the act of muscular contraction, that is, in muscular work of every kind. It is to food from this class that we expect to derive firm muscles, in good condition for active work; and as it is such that we want in the soldier, the supply of such food should be in proportion to the amount of work that is expected from him. It is by means of such food, combined with suitable exercise in the open air, that the bright red appearance of healthy muscle is obtained, but we must always remember that our muscles are fatigued when we use them, we cannot do more than a certain quantity of work during a certain time. Our muscles want repose and time as well as food for restoring their energy and their power.

Secondly, the nitrogenous substances assist in the production and maintenance of heat. Professor Frankland accurately measured the heat produced by burning in oxygen one gramme of albumen, beef muscle, &c., and from the result calculated the number of heat-units obtainable; a heat-unit being equal to one gramme of water raised one degree centigrade. His experiments gave the following results:—

Actual Energy developed by each Substance when Consumed in the Body.

Name of substance, dried.	Heat-units.	Foot-tons of force.
Beef muscle, purified	4,368	5·96
Albumen, purified.....	4,263	5·82

It is then to the chemical oxidation of nitrogenous matter that the nutrition and re-formation of their tissues, as well as the production of muscular heat, is due; but please remember that such substances are inadequate to support human life by themselves, and that an animal fed exclusively on such a food would die of starvation.

2. *The Non-Nitrogenous Substances.*

These include *two* classes: first, the *oils and fats*, composed altogether of carbon and hydrogen, with a small proportion of oxygen; and, secondly, the *starches*, such as are contained largely in flour, potato, &c. The former are known as hydro-carbons, the latter as carbo-hydrates. As the heading implies, they have no nitrogen entering into their composition.

The hydrocarbons or fats are represented by butter, suet, dripping, &c., and are contained in more or less quantity in all animal and vegetable food.

Now to what purpose in the animal economy is this class subservient? The first great purpose is the maintenance of heat, and the second is the production of mechanical force. Fats are capable of undergoing direct oxidation, and it is their union with oxygen or their combustion in the muscles which generates the force, which is rendered apparent in locomotion or manual labour; muscular work *can* be done, and frequently is done, on food containing no nitrogen, as on a diet of biscuits of starch and sugar, or starch and fat, but there is a limit to the muscular force which can be exerted under such circumstances.

This class of food can only be digested when used in conjunction with nitrogenous food, for it has been proved by experiment that if animals are fed on fats alone, they soon cease to digest their food, the appetite fails, and they die of starvation. Fat, however, has over

twice the potential energy of the carbohydrates, but it cannot be used alone in their stead, at least, not in temperate and tropical climates, although in very cold regions it is capable of being used in this way. I have seen this in Northern Canada, where enormous quantities of fat were disposed of. And here it may not be out of place to mention that there is a strong presumption in favour of the opinion that "the absence or deficiency of oleaginous matter in a state fit for appropriation by the nutritive processes is a fertile source of diseased action, especially that of a tuberculous or consumptive character."

Of the invalids passing through the Royal Victoria Hospital, Netley, under three years' service, the majority are discharged, *first*, from pulmonary consumption; *secondly*, from heart disease, and I believe there is reason to suspect that these diseases are at least favoured by an injudiciously arranged diet, as I shall show hereafter.

I mentioned as a subdivision of this second great class the carbohydrates or starches, which are derived solely from the vegetable kingdom, such as wheat flour, arrowroot, potato, &c. In their natural state, *i.e.*, as starch, they are never absorbed into the blood; they require as a preliminary condition to undergo the process of digestion, whereby they are changed into sugar and they are closely allied to the hydrocarbons or fats. These two substances are subservient to the same purposes in the animal economy, but must be each used in proper proportion. We cannot, as yet, assign to each its independent or relative value, but we know by direct experiment that, though so closely allied, they are not interchangeable, and that one cannot always replace the other. Such, then, are the general uses of the non-nitrogenous elements, they produce fat, and by oxidation, heat and mechanical energy.

3. The Inorganic Salts.

Under this head are included chiefly sodic chloride, or common salt, potassic chloride, calcic carbonate, &c., and sulphur, all entering with a certain percentage of water into the composition of some of the more complex principles of food already considered. With the exception of water and common salt these substances are contained in sufficient proportion in the preceding groups, and do not require to be separately supplemented.

Salts probably assist in the oxidation of matter, whether effete or otherwise, when increased energy is demanded, and the solvent power of salt over albuminous compounds is perhaps another reason why it is so largely used, but I must acknowledge that the precise mode in which salts act has not yet been ascertained.

Before leaving this part of my subject, I must not omit to refer to the necessity of fresh vegetables as an article of diet.

These vegetables belong chemically to the carbo-hydrates, but act differently. They contain oxygen in excess of that required to form water; the invariable consequence of the omission of them is soon

followed by the development of the condition known as "scurvy," while they are among our best remedies for the cure of these affections.

Having thus briefly considered the general principles of diet, I shall now pass on to the consideration of the soldier's diet in detail, which forms the chief object of this paper. You will remember that when speaking of the soldier's work I considered it as equivalent to 300 foot-tons daily; now we ought to estimate his food in connection with the amount of work he is called upon to perform, and I shall, therefore, give a few standard diets to enable us to compare the soldier's diet with the quantity of food required. The food necessary in actual repose is, according to Playfair, as follows:—

	Ounces.	
Albuminates.....	2.0	} Nitrogen, 138 grains. Carbon, 2,969 grains. Salts, 219 grains.
Fats	0.5	
Carbo-hydrates	12.0	
Salts.....	0.5	
Total water-free food	15.0	

Calculating the potential energy in foot-tons, we have—

Albuminates	337 foot-tons.
Fats	140 "
Carbo-hydrates	1,816 "
Total.....	2,293

It is doubtful if this is even a subsistence diet. Dr. Parkes considered a man would lose weight on it.

Moleschott has given a standard diet for a man in ordinary work. It is as follows, and is based on the amount required for 300 foot-tons of productive work:—

	Ounces.	
Albuminates	4.59	} Nitrogen, 315 grains. Carbon, 4,734 grains. Salts, 463 grains.
Fats.....	2.96	
Carbo-hydrates	14.26	
Salts.....	1.06	
Total water-free food..	22.87	

For any laborious work, and for active service in the field, this diet should be increased to the following quantities:—

	Ounces.	
Albuminates.....	6.5	} Nitrogen, 455 grains. Carbon, 5,990 grains. Salts, 568 grains.
Fats	4.0	
Carbo-hydrates	17.0	
Salts	1.3	
Total water-free food..	28.8	

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Proximate aliment.	Absolute rest.	Ordinary work = 300 foot-tons.	Hard work, or active service in the field.
Albuminoids.....	Ounces. 2·0 } Nitrogen, 138 grains. 0·5 } Carbon, 2,969 grains. 12·0 } Salts, 219 grains. 0·5 }	Ounces. 4·59 } Nitrogen, 315 grains. 2·96 } Carbon, 4,734 grains. 14·26 } Salts, 463 grains. 1·06 }	Ounces. 6·5 } Nitrogen, 455 grains. 4·0 } Carbon, 5,990 grains. 17·0 } Salts, 568 grains. 1·3 }
Fats.....			
Carbo-hydrates.....			
Salts.....			
Total water-free food.....	15·0	22·87	28·8

25 N

These would yield of potential energy—

Albuminates.....	337 foot-tons.	784 foot-tons.	1,124 foot-tons.
Fats.....	140 "	1,118 "	1,512 "
Carbo-hydrates.....	1,816 "	1,967 "	2,346 "
Total foot-tons.....	2,293	3,869	4,982

These may be accepted as standard diets. For peace-time at home, and for growing men, that for 300 foot-tons of active work may be taken. The diet contains the amount of aliment necessary for a man weighing about 10 stone. It gives him 22·87 ounces of water-free food. Perhaps it may be desirable that I should here explain what is meant by water-free food. Every alimentary substance, flesh, fish, bread, vegetables, and the like, contains a certain amount of water.

In meat the water is	75 per cent.
In potatoes the water is	74 „
In bread the water is	40 „
In cabbage the water is	91 „

In mixed food the water may be taken at 50 per cent., so that a man getting 22·87 water-free food would really receive 45·74 ounces of ordinary food.

In addition to this, a man requires 50 ounces or so of water, in some shape or form; this is the usual range, but the exact quantity varies with the size and activity of the individual.

I have placed in this table the percentage composition of some of the ordinary articles of food one is likely to meet with in the Service.

Percentage Composition of Foods.

Articles.	Water.	Albuminates.	Fats.	Carbo-hydrates.	Salts.
Meat	75·0	15·0	8·4	..	1·6
Pork	39·0	9·8	48·9	..	2·3
Bacon	15·0	8·8	73·3	..	2·9
Fish	78·0	18·1	2·9	..	1·0
Bread	40·0	8·0	1·5	49·2	1·3
Potatoes	74·0	2·0	0·16	21·0	1·0
Flour	15·0	11·0	2·0	70·3	1·7
Rice	10·0	5·0	0·8	83·2	0·5
Milk	86·8	4·0	3·7	4·8	0·7
Butter	6·0	3·3	88·0	..	2·7
Oatmeal	15·0	12·6	5·6	63·0	3·0

And now to summarize what I have just said. A soldier's ration should consist, at least, of nitrogen 315 grains, of carbon 4,700 to 5,000 grains daily, and in the following proportions:—albuminoids, 4½ ounces; fats, 3 ounces; carbo-hydrates, 15 ounces; and salts, 1 ounce. This would yield productive work equal to 300 foot-tons, after providing for the internal heat and the work of the body itself, which latter may be taken together as equal to 260 foot-tons.

I should deem it unnecessary to mention in this place the sources from which the soldier draws his food, if it were not that to do so will help my explanation of the nutrient value of his diet.

In the first place, he draws from the Government $\frac{3}{4}$ lb. of meat and 1 lb. of bread.

Secondly. By payment of $3\frac{1}{2}d.$ per diem he gets his grocery ration, usually excellent, and fully worth the money.

Thirdly. These are his individual purchases, and it is hard to determine this uncertain quantity.

The grocery ration is not the same in all regiments, and latterly a complete change has taken place in many.

Taking that which is usually supplied, we may, I think, accept the following as a fair sample of the soldier's ration, including the Government ration and his grocery ration, but excluding his private purchases:—

Articles.	Quantity taken daily in ounces and tenths of ounces.	Water.	Nitrogenous substances.	Fat.	Carbo- hydrates.	Salts.	Water- free food.
Meat.....	12 ozs., of which one- fifth is bone.	7.20	1.44	0.81	..	0.15	2.40
Bread.....	24	9.60	1.92	0.36	11.81	0.31	14.40
Potatoes.....	16	11.84	0.32	0.02	3.36	0.02	3.72
Vegetables.....	8	7.28	0.14	0.04	0.46	0.06	0.70
Milk.....	3.25	2.82	0.13	0.12	0.16	0.02	0.43
Sugar.....	1.33	0.04	..	..	1.29	..	1.29
Salts.....	0.25	..	..	..	..	0.25	0.25
Coffee.....	0.33	..	..	..	..	..	..
Tea.....	0.16	..	..	..	..	..	..
Total quantity.....	65.32	38.78	3.95	1.35	17.08	0.81	23.19

Nitrogen = 276 grains.
Carbon = 4,588 grains.
Salts = 354 grains.

This gives a total of 23·19 ounces of water-free food. The potential energy of this diet is—

Albuminates.....	673 foot-tons.
Fats.....	510 „
Carbo-hydrates	2,357 „
Total.....	<u>3,540</u>

Comparing this with the standard diet, we find a deficiency of 11·5 per cent. in the albuminates, of 54 per cent. in the fats, and more than 23 per cent. in the salts, whilst the carbo-hydrates are 19 per cent. in excess.

This is very short of the standard diet, and is most important when we look to its source. As a result of this deficiency in the albuminates and in the fats, increased work is required from the carbo-hydrates, and this the system does not readily adapt itself to. In the standard diet, 20 per cent. of the potential energy is due to the albuminates, 29 per cent. to the fats, and 51 per cent. to the carbo-hydrates. Whereas in the soldier's ration, 19 per cent. is due to the albuminates, only 14 per cent. to the fats, and as much as 68 per cent. to the carbo-hydrates.

Now let us compare this with the diet issued to Continental armies.

In Continental armies we find that, with the exception of the Austrian Army, all have over 26 ounces of bread, and six have 30 ounces or more. The meat ration of the Continental armies is on an average only 7½ ounces, the Swiss Army being the highest with 11 ounces.

Soldiers' Rations of European Armies in Ounces Avordupois.

	French.	German.		Austrian.	Belgian.	Dutch.	Swiss.	Italian.	Danish.	Swedish.	Russian.	Turkish.
		Smaller ration.	Larger ration.									
Fresh meat.....	10·58	3·8	8·81	9·87 or 5·99	8·81	8·81	11·00	6·34	8·74	5·67 4·09	7·054	9·05
Salt meat.....	"	"	"	"	"	"	"	"	"	"	"	"
Preserved meat ..	"	"	"	"	"	"	"	"	"	"	"	"
Dutch cheese, }	"	"	"	"	"	"	"	"	"	"	"	"
sardines in oil }	"	"	"	"	"	"	"	"	"	"	"	"
Fish	"	"	"	"	"	"	"	"	"	"	"	"
Bread.....	35·27	26·45	26·45	5·29	27·16	26·45	26·45	32·38	26·45	4·01 29·98	"	34·08
Butter.....	"	"	"	3·527	"	"	"	"	"	"	"	"
Biscuit.....	"	"	"	25·18	"	"	"	"	"	0·24	34·9	"
Flour.....	"	"	"	7·76	35·27	2 litres	"	"	"	"	"	"
Potatoes	3·527	"	70·54	"	"	4 <i>l.</i>	1 <i>l.</i>	1 <i>l.</i>	"	"	"	0·74
Other fresh vege- tables.....	"	"	"	"	"	"	"	"	"	"	"	"
Dry vegetables....	1·058	"	or 10·58	"	"	"	"	5·29	"	"	"	0·77
Rice.....	"	"	or 4·23	"	"	1·763	"	"	"	"	"	3·35
Barley.....	"	"	or 5·29	"	"	"	"	"	"	5·6	"	"
Oatmeal	"	"	"	4·93	"	"	"	"	"	"	"	"
Suet.....	"	"	Sour Kream	5·29	"	0·881	"	"	"	"	"	"
Butter.....	"	"	"	1·05	0·70	"	"	"	"	1·13	"	0·33
Oil.....	"	"	"	"	0·35	"	"	"	"	"	"	"
Bacon.....	"	"	"	"	"	1·40 in place of half meat ration in winter.	"	"	"	"	"	"
Coffee.....	"	"	"	"	"	"	"	0·529	"	"	"	"
Sugar.....	"	"	"	"	"	0·7	"	0·7	"	"	"	"
Salt	"	"	"	"	"	0·7	"	"	0·42	"	"	0·74

In all these armies there is a deficiency in fats, while the carbohydrates are in excess. This is particularly the case in the German, Austrian, and Russian armies, where there is a marked deficiency of nitrogen and a too great preponderance of starchy matters, a diet which is unequal to the support of men in health during active service.

The large amount of vegetables used in Continental armies is worthy of remark, and the taste for this class of food is doubtless increased by the foreign methods of cooking, which are so far superior in many ways to ours.

Lately, Colonel Burnett, commanding the 1st Battalion Royal Irish Rifles, has, in a memorandum addressed to the Quartermaster-General, made some most valuable suggestions, with a view of improving the diet and comfort of the soldier. I am indebted to his kindness for copies of his books, and for very many valuable hints. Colonel Burnett was the first Officer, I believe, who considered that the nutriment of bone, which really forms one-fifth of the soldier's meat ration, should be made use of.

Now, the nutritive value of bones may be reckoned at one-third that of beef in carbon, and at one-sixth in nitrogen.

Colonel Burnett has had the wisdom to ignore the prejudice which exists among certain classes of the English people against any food that is not solid—always excepting beer and wine, which they suppose to be particularly strengthening as well as stimulating. Hence liquid foods are despised and rejected.

Such people constantly say that they have had no food, when in reality they have partaken freely of milk; beef tea, or beer; and yet it was not always so. It is not so long ago that the agricultural labourer, at least in the South of England, used to have broth for breakfast, broth again for dinner, followed by more substantial food, and broth with bread again for supper.

But since the great increase in wages and the cheapening of food in this country, broth has gone out of fashion, and the British workman has got to consider himself well fed only when he can procure for himself a pound of beefsteak, with a modicum of white bread, and beer *ad lib.* The soldier now has much the same ideas, but he should be taught better, and Colonel Burnett deserves the best thanks of the Army for his endeavours in this direction.

In his memorandum, Colonel Burnett mentions that his stock for soup is made from bullocks' heads, and I have carefully calculated the nutritive value of this part of the ox. I find that an average bullock's head weighs 19 lbs. 9 ozs.; that the amount of meat on it, fit for soup, is 9 lbs. 4½ ozs., and the bones fit for soup, 9 lbs. 2 ozs. The bone and gristle from the nose and the parings, which I thought would not be used, weigh 1 lb. 2½ ozs. In a bullock's head we have then 18 lbs. 6 ozs., one-half of which is meat, available for making soup.

There is an expression used I should like to explain. Some speak of "bone soup" as if it contained no nourishment. Now, such is not the case. Bones make most palatable soup, and yield much nutriment.

The following is the composition of bones, in the ordinary beef ration, analyzed at Netley.

Analysis of Bone.

		Constituents of Albuminates.	
Water	12.1	Digestible albuminates ..	10.3
Albuminates	24.5	Peptones	1.9
Fat	11.0	Extractives	1.0
Ash	48.6		
Loss	3.8	Total useful.....	13.2
	100.00	Indigestible albuminates ..	11.3
		Total	24.5

I have very carefully calculated out the value of the dietary which Colonel Burnett has arranged, and find it as follows:—

Colonel Burnett's Scale.

	Albu- minoids.	Fats.	Carbo- hydrates.	Nitrogen.	Carbon.
	Ounces.	Ounces.	Ounces.	Grains.	Grains.
Breakfast	0.9922	1.2400	5.2663	69.454	1637.6
Dinner { Soup	0.9126	0.2992	1.2227	63.882	531.2
{ Meal, &c.	2.1657	0.9073	6.0503	151.599	1937.7
{ Pudding and pie ..	0.1765	0.3238	1.1282	12.355	365.2
Supper.....	1.0401	0.4676	5.2867	72.807	1395.3
Total.....	5.2871	3.2379	18.9542	370.097	5867.0

In this scale, we have—

Albuminates.....	5½ ounces.
Fats	3¼ ”
Carbo-hydrates	19½ ”
Nitrogen	370 grains.
Carbon.....	5,867 ”

The potential energy from this diet is equal to 4,742 foot-tons.

I gave Colonel Burnett the results of a previous analysis of his system, pointing out that it had only one fault—deficiency in fats, and suggesting that he should endeavour to remedy this by adding one ounce of fat in the form of butter, suet, dripping, or the like, to each ration, and he at once adopted that suggestion, and the above is his amended scale.

This result is achieved without one penny extra expense to the State or to the private soldier. This diet is ample, it provides for 400 foot-tons of productive work. Now, this, in more concrete terms, means

that a soldier, whose weight with his clothes is 160 lbs., can carry 60 lbs. of ammunition and walk a distance of $15\frac{1}{4}$ miles on this food, which is ample to provide the mechanical energy for such a march. I have no better solution to offer than Colonel Burnett has given. He has shown how the soldier may be fed both economically and well. It has been argued that prices are low at Mullingar—of this I know nothing. I take it to be the duty of the medical Officers to say whether food is sufficient in quantity and good in quality, or whether it is not. And if it is both these, and properly cooked, they have no further advice to offer.

I beg to quote here one or two extracts from Colonel Burnett's letter to me.

"A singular thing," he says, "about the new system is, that it has been found to increase the soldier's meat ration at dinner. Since I first started making soup from the bones, I have had them weighed, and at first found that the proportion of bone averaged between $\frac{1}{3}$ and $\frac{1}{4}$ per man, but now the proportion of bone is found to be $\frac{1}{7}$, $\frac{1}{8}$, and even $\frac{1}{9}$.

"The explanation of this is that when bullocks' or sheep's heads are not procurable (which is frequently the case) the companies purchase shins from the meat store to make their supper stews with, and in this way dispose of a considerable portion of bone which would otherwise have to be issued with the men's rations. It will be apparent in this way that the men's actual meat ration has been virtually increased, and a test will clearly prove the truth of this. The prices in the grocery book will probably appear low, and may give the impression that the articles are not of good quality; but I would assure you that they are excellent, and the prices have been arrived at by my insisting on the contractor supplying the canteen on the lowest possible prices at which I found they could be got. From the canteen I have them issued at cost price, on the principle that as they form part of the soldier's daily ration, no one has any right to make a profit on them."

"Another objection to my system which has cropped up, and which I think it right to refute, is that in large garrison towns there are so many attractions outside barracks, the men would not stop in for their suppers.

"The same might be said of the present tea meal, and yet it is provided. To make my plan work, I allow the men to fix their own supper hour, which they do, and in this way I find that almost to a man they wait for their suppers (which are attractive enough to induce them to wait), and go out afterwards."

"Anyway, if a good supper is provided, even if the men do not wait for it, it cannot be said that the State has not done its duty towards them. A great thing is to get the men to eat their suppers, and I am convinced this can be brought about by allowing them to have a voice in the matter of arrangements, &c."

The ordinary diet of the soldier is, unless the greatest supervision be taken, quite insufficient, and it should be our aim to provide him with food that shall furnish him with enough force for the work

required of him, and also of sufficient variety to prevent the occurrence of scurvy. It must be remembered that two points are now well established without doubt:—1. That man can live on vegetable food only, provided it contains nitrogenous matter, fat, and starch in due proportions. 2. That man cannot live and keep well on cooked meats alone, he requires the addition of starch. If a man is in good health the balance between the amount of nitrogen ingested and ejected is fairly evenly kept, but if the amount of nitrogen be diminished below the proper standard, debility follows, with emaciation, the result of rapid destruction of tissue. If under such circumstances exercise be continued, then, as muscles while in action appropriate nitrogen, this nitrogen must be supplied by food, or be taken from some other part of the body. In other words, in the absence of a proper supply of food, the active muscles feed on those less actively employed. Perhaps this is one of the reasons why so many young soldiers break down in our Army from that irritable condition of the heart known as "the soldier's heart."

Sir William Aitken tells us that "recent observations have shown that the greatest amount of growth of the heart takes place at from 18 to 25 years of age, so that up to the 25th year of life the heart has not matured in growth."

The heart is in constant action, and requires a large supply of nitrogen for repairing the waste that continually occurs, and this is lessened by the voluntary muscles being exercised, when sufficient provision is not made for the supply by food. Another point, or error, I should say, rectified by Colonel Burnett's scale is the sameness in the dietary of soldiers. This monotony, which has been more or less a constant factor, causes the appetite to lessen, whence the health soon suffers.

A monotonous diet probably contributes, although in a minor degree, to produce the bodily condition known as scurvy, and no condition is so prejudicial to an army in the field as this one. Every Medical Officer, nay, every Commanding Officer, knows what this means; how scorbutic dysentery runs riot; how the dangers from typhus, from cholera, and from typhoid fever are increased one hundred fold.

As to other causes of this dire disease, we know little except that it follows upon a deprivation of fresh vegetables, and upon a diet in which the nitrogenous elements is insufficient. Where vegetables are not to be had, lime-juice must be given; its good effects are too widely known to need further comment.

Returning now for a moment to the quantity of food that should be allowed to our soldiers, I desire to insist on the fact that Nature is a liberal, even a lavish, mother. When left to herself, she sows several hundred times more seed for her crops than men sow for theirs, and she gives infinitely more nourishment, animal and vegetable, than they require or can consume.

Nature is not always right. She is certainly not always economical; but is it wise for us to depart from her methods to too large an extent? Certainly we should no more stint our soldiers from whom we want

activity and energy, than we should stint a steam engine of fuel when we want steam. Some men eat more than others at all periods of their lives, but it is an almost universal rule that young and growing animals eat and require more food than those whose growth is complete. Hence the younger a regiment or an army, the more food it will require, and as our Army is now a very young one, it needs more food than was required when its average age was greater. If men get abundant food, they do not require stimulants, which is only, as far as beer is concerned, another form of food, bad in many ways, but seductive for various reasons. A wise Government should not leave so important a matter as the feeding of its soldiers to the chance of its being properly considered by a raw recruit.

The Government should, I think, provide the soldier with a full and complete diet, composed of meat, bread, vegetables, and condiments, all in due proportion. Government should likewise secure the proper cooking and serving of the food, and then the soldier might be safely depended on to do justice to his fare. As to the hours at which he should partake of his meals, we must remember that it is totally unsuited to the ideas and habits of the working classes of this country to have late dinners. The dinner hour should be, as heretofore, between 12 and 1 o'clock, but there should be a warm and substantial supper at about 6 or 7 o'clock. In fact the soldier should be fed just as the agricultural labourer used to be fed, in the days when there were agricultural labourers, viz., upon three meals a day:—

Breakfast between	7 and 8.
Dinner between	12 and 1.
Supper between	6 and 7.

In addition he should have a cup of coffee, and if possible a biscuit, before being called upon to do any unusually early work: it is not safe to send a young lad to work without food; the work is then specially exhausting to him, and he is more prone to be attacked by sickness under such conditions than if he had had some food. Perhaps this might be provided for out of the canteen funds. Also a fixed time should be allowed for each meal. I have known cavalry regiments in which the men had only ten minutes or a quarter of an hour to swallow their breakfast. This is decidedly wrong, and I am certain if Commanding Officers were aware how very injurious it is to hasten men and work them like this, they would not allow it. Not less than half an hour should be given for breakfast, and this should be *at the meal*. The time spent in going to or returning from their duties should not be included in this period.

Formerly, when the soldier was older, the need for all this attention to his food was not so great as it is now, but the neglect of it was often attended by its natural consequences, drink, ill-health, and shortened life. As regards alcoholic liquors, especially in India, the State should, I think, give the soldier less help than it does. Soldiers do not want encouragement to drink strong drink, but rather the contrary. The spirit ration is certainly a mistake. Some think that

good liquor is harmless, and that only the inferior kinds are capable of upsetting the stomach and brain. This is a fallacy. Alcohol interferes with the oxidation of the muscles, and with the power to repair their waste; in short it impedes their nutrition. As Sir Lyon Playfair says, "The wayward gait of the drunkard under the influence of alcohol is probably the result of a similar obstacle to change." All liquor, then, in excess is injurious, even if it be of the oldest and best.

It is a question whether it would not be better that ration bread should be made from whole meal than from refined flour, whole meal being more rich in nitrogen and fat than refined flour. The bread should be thoroughly well baked, and not eaten too fresh. At Netley the bread is baked in 2-lb. loaves, and a batch of 800 lbs. of dough is worked up into 398 loaves. Of these 4 are corner loaves, with four sides of crust out of the six; 16 are side loaves with three sides of crust out of the six; and 318 are inside loaves, with only two sides (top and bottom) of crust.

An inside loaf (two sides crust) gives about 16 per cent. of crust and 84 per cent. of crumb. An outside loaf with four sides crust gives 31 per cent. of crust and 69 per cent. of crumb. Taking the mean of all the batch of bread, we get of crust, 18·12 per cent.; of crumb, 81·88 per cent. The percentage of water-free solids in the crust is 90, in the crumb it is 63.

Now it is evident from these figures that the soldier does not get his proper due when the bread is baked in such large batches, or when the baking is insufficient. He then does not obtain anything like his proper proportion, and as this crust contains more nitrogen, he loses this, as well as in the weight.

In smaller batches the bread would keep far better, and it would also be much more nourishing if it were properly baked. Some change is needed in this respect. I do not think many of us would be content to get our bread each day with only the top and the bottom of the loaf crust, and this is one reason why so much of the soldier's bread finds its way into the refuse tubs.

I have made very many analyses of flour, and my experience is that the Government get good flour of its kind: it contains but a small proportion of water, and is rich in gluten. The great fault lies in the baking; often bitter yeast is used, and in the course of fermentation an acid is formed, in other words, the bread turns sour before it is issued. The acid of crust is 0·009 per cent., and the acid of crumb is 0·049 per cent., or about five and a half times more acid in the crumb than in the crust, which is another reason why there should be less difference between these two parts of a loaf. If bread does go sour, the excess of acidity is in the crumb. The crust also has great influence on the weight of a loaf, as it prevents evaporation, and when there is much crust, the entire loaf yields a less percentage of water.

Another supply which is frequently of very inferior quality is milk. I think it is probable that many of the anomalous cases of fevers which are seen from time to time might be traced to this source.

The death-rate at home from enteric fever is higher among soldiers than in the same class in civil life, although the soldier is living in many respects under far more favourable conditions.

If we take the total enteric fever death-rate for the Army in the United Kingdom, we find this to be 0.31 per 1,000 of strength, as compared with 0.28 among the males in the total population between the ages of 15 and 45 years; this is 0.03 above the civil population. On turning to Sir Charles Cameron's report on the Royal Barracks, Dublin, he states, "in most cases the supply," that is of milk, "proved to be of very bad quality." Adulteration with water ranged from 13 to 56 per cent. in the Royal Barracks, and from 15 to 50 per cent. at other barracks. This adulteration was not confined to the milk supplied to the men.

In the supply to the Officers' mess 19 per cent. of water was added, and a specimen of milk retailed in the barracks was found to be adulterated with 38 per cent. of added water. I am afraid Dublin is not the only place where such adulteration exists. Apart from depriving the men of a portion of their food, there is the danger of introducing specific disease through an adulterated milk supply. Some system should be adopted to secure a pure and wholesome supply—even at greater cost. The milk should be delivered in bulk and samples taken and tested, as is the practice, I believe, in many large institutions in civil life.

I now come to the question of meat supply, and this for the Army is a difficult one.

When the executive branch of the Army Service Corps buy their own cattle and kill them there is no difficulty in the matter, but when the contractor steps in, who often has secured his contract at so low a figure as to allow himself only a very small margin for profit, then the door is open for every sort of abuse. The remedy provided by the State for the protection of the soldier becomes under such circumstances an almost useless one. A Board of Officers assembles to pronounce whether the meat is fit or otherwise, and this they are ordered to do although they have received no training and cannot reasonably be expected to judge between different kinds of meat.

The means or tests of determining the quality of meat are imperfect at their best. Of course any one can tell whether meat is stale or putrid, but it is an exceedingly difficult question to decide whether a certain issue is too fat or too lean, or whether it contains too much bone, this being a question of degree, and there being no fixed standard. It is still more difficult to say whether a given specimen of meat has come from a bull or an old cow, from an animal that has died by acute disease, or from being choked by a piece of turnip. I have heard it said, although I cannot vouch for its being true, that there is a class of butchers who deal especially in meat from cattle which have not been killed in the usual way. This is a most important point, and we hope to instruct the young Medical Officers who join at Netley how to perform this duty of inspecting meat, so that they may be able to give advice on it when called on to do so. Unfortunately, it is only of late years that any attention has been

devoted to the influence on health of the flesh of diseased animals when used as food.

Professor Gamgee states that several cases of illness have come under his observation, produced by the use of the flesh of animals suffering from inflammatory diseases; and the Registrar-General for Scotland tells us that the mortality from carbuncular diseases has greatly increased since pleuro-pneumonia became an endemic disease among its herds.

It is a question whether at home pork might not be issued as a ration once a week, say, on Sunday. This is really a soldier's food. On certain occasions he gets it, on board ship for instance, as part of his ration, and he enjoys it. Married soldiers, who purchase their own food, constantly buy it. Why should it be denied to the unmarried soldier on home service? It contains a very large percentage of fat, just what his diet is generally deficient in. It is well worthy of trial, but care should be taken that the meat is sound and properly cooked.

In all meat supply the standard of quality should be raised. Meat is frequently on the borderland between good and bad, and it is impossible to condemn it as "unfit for issue." Yet no one would dream of purchasing such a supply for his own use. The animal should have been in good condition and the quality of meat the best; bone should never exceed 20 per cent.

I cannot help thinking that by always taking the lowest contract, temptation is offered unscrupulous dealers to palm off bad meat on the soldier. We know that prices are so cut down by the contractors tendering so low and risking any loss to obtain a contract, that it is out of the question for them to supply food of really good quality and also allow of a margin for fair profit. It also has the effect of preventing honest men from undertaking this work, which, by the stringent use of this rule, almost of necessity falls to the dishonest speculators.

The quality of meat is to be judged of by the character of the pulp or enclosed substance. The toughness depends on the connective tissue, which is most abundant in the ill-fed, ill-bred, and old animals. Young and quickly fed animals have more water and fat in their flesh, whilst older and well-fed animals have flesh of a firmer touch and fuller flavour, which is richer in nitrogen. All Officers in a regiment should be instructed in the terms of the contracts. If they did know them and really understood what the State requires, it would in a great measure dispose of the difficulties that so often are met with.

And now I come to the not least important point to notice—the cooking. Much of the inferiority of the soldier's food is due to defects in this respect. Considering how very important the subject is, it is surprising that the soldier is not instructed in the art of cooking, and I venture to say that this knowledge would prove far more useful to him on a campaign than proficiency in decimals or any other arithmetical fractions. Every soldier should be taught to cook his own food; it would not be difficult to do so, and the saving in waste

would well repay the trouble. At present the duty seems to be performed in a perfunctory manner—as a duty—and until some inducement is offered by increased payment, I am afraid it is hopeless to look for much improvement in this matter.

Those who have much more knowledge and experience than I have, complain that the present system is extravagant and wasteful. However this may be, the quantities of the articles used on certain occasions appear too large. To take one single item: flour for meat pies, say, for 60 men, is put down at 15 lbs.; it is found that 10 lbs. is ample. This latter forms a light thin crust, and allows the meat being properly cooked, in place of its being sodden and hard.

The object in cooking should be to render the meat more easy of digestion, but this, it is very evident, may be prevented if the cooking be so bad as to cause the meat to become a hardened solid mass, devoid of nutritive juices.

Time will not permit me to say more. It is only in these later days that even men of science realize the fact that the human body has to be fed with appropriate food and not be overworked; that whilst it may from one point of view be regarded as the highest integration of the physical, chemical, and other forces, it is subject to much the same laws and rules as are the other bodies of the higher animal series, and that if we wish to keep in health, we must conform to these rules.

General Sir ARTHUR HERBERT, K.C.B.: Mr. Chairman and gentlemen, having throughout the whole course of my career taken a great interest in cooking and in the food for the soldier, and having had the instructional kitchen at Aldershot under me when it started, I cannot quite agree with the lecturer that no attention has been paid to the food of the soldier, and that the cooking is as deficient as he wishes to make out.¹ The lecturer says that there is no variety in the food of the soldier. If he will look at the instructions that are given to the cooks, and at the

¹ I happened yesterday to have received a letter from an Officer who takes interest in the welfare of his corps, which shows that where attention is paid to the messing the men are well fed.

The following is a list of the meals taken from the messing book of a corps in Scotland:—

Breakfast, 8 A.M.	Dinner, 1 P.M.	Afternoon tea, 5 P.M.	Supper from 8 to 8.30.
March 10th, porridge	Sea pies, plum pudding....	Every day..	Pea soup.
„ 11th, tea, 2½ oz. cheese	Irish stew and cabbage....	..	Potato soup.
„ 12th, porridge	Meat pies and dumplings....	..	Scotch broth.
„ 13th, tea, 5 oz. saveloy	Sea pies and plum pudding..	..	Lentil soup.
„ 14th, porridge	Baked meat and peas.....	..	Pea soup.
„ 15th, tea, liver and bacon	Meat pies and dough nuts..	..	Potato soup.
„ 16th, porridge	Baked meat and peas.....	..	Scotch broth.

dietary in a regiment well commanded, he will see that the cook is obliged to show that the food is varied every day. I have inspected fourteen to twenty regiments in a season, and if the food had not varied the Commanding Officer would have been called upon for his reasons for having disobeyed the orders. I agree that in many regiments there is great carelessness, and that the soldier does not get as much food, or as varied, as he ought to receive. But, why is that? It is from want of supervision. If there is proper supervision, if the Officers do their duty, if the sergeants do their duty, without additional expense, the men have as good food as they can desire. When I commanded a brigade at Aldershot, I was on a Committee appointed to devise the best manner of cooking for the Army, and we tried experiments in two regiments. At first, the men objected to curries and certain other dishes we introduced; they wanted to have merely roast and boiled. I gave an order to go on with the system under trial, and after a month's time the men came round, and were delighted with the new modes of cooking. But I will tell you what occurs. When I commanded in Dublin, there were two regiments in the garrison; the one was well commanded, the cooking well looked after, and the charge for excellent messing was only 3*d.*; the other regiment paid 3½*d.* The one regiment had as much as they could eat; they had an admirable system, which without extra expense gave the men even what the lecturer has so ably suggested as being required, viz., suppers. Each man, instead of having tea, was given a ticket every morning by the pay-sergeant of his company, and for that ticket he could have at any time between 6 and 8.30 soup or tea, whenever he came home, in the recreation room, which was a most admirably managed institution. If he was out, and did not come in till too late, his ticket was available again for the next day, so that he could have a double share when he wished. The lecturer objects to the dress of the soldier. Having had the arrangement, under the Commander-in-Chief, of the dress of the soldier for some years, I am at a loss to know what fault he has to find with it. I beg to inform him that Dr. Parkes, who was a great friend of mine, was consulted about the service dress, and Dr. Parkes agreed most thoroughly that the patrol jacket, worn now in marching order, is about the best dress a soldier could wear. There is no army in Europe, and I have visited them all, that has a dress so loose or so convenient, or so easy round the neck. The Italian Army has a rolled collar, but it is hooked up tightly. The Prussian Army has a stiff and high collar, and so has the Russian. I cannot go into the fats and the salts, and that part of the lecture, because, as I do not understand chemistry, I take for granted the lecturer is perfectly right in what he has said on this subject. The question is, whether additional expense must be incurred to feed the Army, and I think he agrees that with proper care and supervision the soldier can be well fed without going to any additional expense, or reducing the Army. And it must be remembered if we go to the expense of adding a quarter of a pound to the soldier's meat ration the number of men will be reduced, because the country will not consent to add to the Estimates. I have been on full-pay serving with soldiers for forty-eight years, and I have never in any well-commanded regiment met with any outbreak of scurvy produced by the food the men received. The state of the milk supplied to the Royal Barracks, Dublin, has been referred to. I resided in the Royal Barracks when in command of the garrison, and during that time the medical Officers were good enough constantly to inspect the milk, and constantly to have it analyzed, and, therefore, if great adulteration exists, and no doubt it does from what the lecturer has said, it is from want of care and supervision on the part of the Officers. Contractors manage to deceive, and to do you, just as well when you kill your own cattle, as they do when the meat is supplied by contract. When commanding at the Curragh some years, we thought ourselves very sharp, and I had all the animals inspected the day before they were killed; yet complaints came to me that the meat was not up to the quality that it ought to be. I went down myself and saw the animals. I found them in excellent order; the next day I went round, and I found that the meat was far from what it ought to have been. It was afterwards discovered that the contractor, by bribing two of the non-commissioned officers, was in the habit of taking the good animals out of the depôt after they had been inspected by the Board and by the Commissariat Officer, and during the night substituting old cows, which were killed and served out to the soldiers. There is

another little mistake that the lecturer made. The lowest contract is not always taken. Having for a number of years had to do with these contracts, I know that the Director of Contracts does not always take the lowest tender, if he has good cause to know or to believe that the person tendering lowest has been complained of, or has not given satisfaction. I have constantly had ration meat, and I have found the ration meat was not at all bad; in fact, the mutton issued at Aldershot was far better than the mutton I could buy in the town.

Brigade-Surgeon MYERS: Having served thirty years with the Army, though not nearly so long as Sir Arthur Herbert, I can say that the food has considerably improved since he devoted so much time and labour in watching over the interests of the soldier, both as to its quality and to the mode of cooking, and I think it is now universally accepted that it depends very much on the Commanding Officers of regiments how that food is supplied. With regard to the system adopted by Colonel Burnett, there does not appear to me to be anything specially novel in it, and there surely is nothing new in the fact that considerable nourishment can be obtained from bone when used for soup. The fact, however, that bullocks' heads can be purchased in the distant parts of Ireland for 1s. cannot apply to a large garrison like London, where the average price is 4s. to 5s. From the remarks of Sir Arthur Herbert it is obvious that many Commanding Officers have interested themselves in this question of the soldier's food of late years, and have done much also in promoting the soldier's interest in this matter, though, perhaps, such a systematic arrangement as Colonel Burnett's has not been adopted. With regard to bread, I do not agree with the lecturer, that the flour is of good quality. I have been told by Officers who have to deal with this matter that they cannot make good bread with bad flour, and certainly one baker to whom I showed a sample of flour the other day told me he thought it was very poor. I am, however, no judge of flour myself. There is one point with regard to the contractor. I certainly thought I was always instructed that the lowest contract had to be accepted: in fact I think I have seen it printed that the lowest contract must be accepted. Perhaps this has been altered in recent years. I should like to know is it or is it not a fact that a contract for food supplies may be rejected, and that the contractor may have to give up his contract in consequence, and yet in the following year he may again put in a tender, and if this is the lowest it is again accepted? I believe I know of a case in which that was done after one contract was rejected. Surely if a contractor's supplies are bad, and his contract is consequently rejected, he ought not to be allowed to tender again for some years. It seems to me that in such a case the contractor's name ought to be put down in a black book. With regard to the supply of meat, I can only say whilst I was in Dublin, where I believe the cattle were brought from Kerry alive, and were inspected by veterinary inspectors, the meat was far better than I have seen it at any other stations. I may also say I have heard, and now I believe it may be true, that at one station—not Dublin—cattle, after being passed, had been driven out at one gate, and old cattle driven in at the other, but until supported by what Sir Arthur Herbert has stated, I could not have believed it possible. Of course management may do a great deal, but chemistry proves one thing, the necessity of certain foods, and I think you cannot get over this fact, that with regard to the food supplies of the Army there is a deficiency of one important element, and that is fat. It is quite clear from these chemical analyses before us that fat is wanted, and really is a necessity. Now I have asked many soldiers, rather hoping that they would hold an opinion contrary to my own, if the meat supplied was sufficient: but if I have asked "Which would you rather have, a quarter of a lb. of meat, or butter?" they would say "butter." If I have asked them if they would prefer cheese to a quarter of a lb. of meat, they would say "cheese." The general rule is to say that they think they have enough meat if the quality were better. I know a regiment at this moment that has established small messes where the men can arrange their own grocery rations. They have messes of about twelve, and one of the chief things they get for themselves is butter. They buy it for their breakfast and tea. The only alteration is that the bread is diminished by a quarter of a lb. They like the plan immensely. Therefore we see what is wanted is an addition of butter to the food of the soldier. It not only supplies him with fat, but it does another thing, it saves great waste in the bread. You cannot expect soldiers to eat dry bread for

their tea ; it is wasted, they throw it away ; but if you give them a small portion of butter the bread is eaten, and consequently you supply them not only with the fat necessary, but also with good food that would be otherwise wasted. I therefore think it very important that a supply of butter should be added to the ration of the soldier. The grocery ration probably can be done more with than it is in many regiments, but surely not more than in the regiment which Sir Arthur Herbert spoke about.

Major FERGUSON, Rifle Brigade : I am sure that all present have listened to the lecture with great interest, and it is very satisfactory to find that science confirms practical experience in so many respects. Ever since I have been in the Army I have been in the habit of hearing that the ration was sufficient for the old soldier, but insufficient for the young soldier. The bread used to be thrown away by the old soldier, and very often picked up by the young, but the meat ration especially I have always understood was found insufficient for the young soldier. Now they are all young together, and, therefore what was formerly only true of a certain proportion of the Army is now virtually true of the whole. I cannot speak from recent experience at home, because I have been serving the last five years in Ceylon, where the meat ration was 1½ lbs., certainly not of such good quality as meat at home, but the ration of meat was the best in the island, and the system was that recommended by the lecturer. The cattle were inspected, they were bought alive, the meat was not supplied after the animal had been killed. The Commissariat Officer inspected the meat every night. Proper precautions were taken to prevent fraud, and I do not think under the system it was possible for a dishonest contractor to make away with good beasts and replace them with those of inferior quality. There was one point the lecturer hardly touched on, and, I think, a very important one, and that is the connection between insufficient food and drink. I am sure the reason why men drink so much in the Army is mainly that they feel the want of food in the evening. It was very true what the lecturer said, that the working classes do eat, as a rule, a supper in some shape or form : their principal meals are the midday meal and the evening meal. Of course there is one other reason why men drink in the evening, and that is because they very often do not know what to do with themselves. I know in very many cases the one idea of pleasure to a soldier is to resort to the canteen in the evening, but if he was not empty, if he had not a sensation of "sinking," he would not drink so much, and he would not get drunk. I am in the presence of many scientific authorities, and therefore I speak with diffidence, but I think I am right in saying men very seldom get drunk in connection with a meal, and that delirium tremens would be almost unknown if men would not drink on an empty stomach. The drunkenness in the Army I think is mainly due to men going to the canteen and boozing, filling themselves with beer to make up for the deficiency of food. The evening meal at present, everybody knows, is a perfect humbug. I earnestly hope that such an evening meal as the lecturer indicated, from 6 to 7 o'clock—the hour being optional with the men—will be given. Of course we shall be met with the assertion that it would involve very great expense, but I am prepared to contend that in the long run it would be the truest economy. If the country will be generous in this matter it will be repaid with interest : we shall have far less drunkenness ; and everybody knows what follows upon drunkenness—disease, hospitals filled, men less efficient in peace-time and not to be depended upon in war. It is not only the effect on the soldier whilst serving that is so serious, but the effect on the nation generally. We are sending discharged men back into civil life every year in thousands. What is the effect which they produce on the general community ? I do not wish to inflict a temperance lecture on this audience, but I was talking on the subject of excessive drinking in the Army to an Officer who has just given up the command of a regiment, and although he did not quite agree with me in some respects, when I said, "I am afraid we are sending back discharged men every year in great numbers who, to say the least of it, are not a benefit to the community," he said, "Nine-tenths of them are men addicted to drink." I will add no more, except to repeat an earnest hope that it will be found possible to give the soldier an evening meal which will keep him in barracks and tend to make him drink less.

Colonel C. J. BURNETT, Royal Irish Rifles : I should not have risen to address the

meeting at all, except for the remark of one speaker in which he insinuated that I had advertised myself by publishing a letter containing my views on the ration question. I had nothing whatever to do with publishing that letter; it did not rest in my hands. I was simply working in the interests of the State and of the soldier, and I thought I was only doing my duty in letting the authorities who had asked me the question know exactly the truth of the experiments that I had carried out. I do not know hardly a soul in this room, but any man who knows me will tell you that is not my character. I have no wish to hold myself up as a mentor or teacher. I know there are regiments as good as my own in the Service; I know there are many Officers who have the same sense of duty that I hope I have; therefore, why would I set myself up to teach men who many of them are as good as myself? What I have done was solely in the interest of the State, and in the interest of the soldier. I was asked a straightforward question, and I gave a straightforward answer. I have been blamed, I know, for doing that; I have been told that I spoke before the time. I have been told that if it had not been for me the soldier would probably have got his extra quarter of a pound of meat. Why was I to hold my tongue, was I to prevaricate? I could not have held my tongue, because the report had to go in; I hope I could not prevaricate, I had to tell the truth, and I told it. There is a question about bullocks' heads—I assure you I am perfectly sick of hearing about bullocks' heads. You need not have a bullock's head to give a man a good supper. There are many other things which you can get if you study local surroundings, and I am sure that there are many regiments that have studied local surroundings, and have not confined themselves to bullocks' heads only. I do not care if I never see a bullocks' head, I can get other things which answer the purpose of the soldier, and suit equally well. I have a detachment at Sligo, where bullocks' heads cost 3s. 6d. each—they are not, of course, used, other things are got. All that has to be done is to exercise close and constant supervision; watch carefully over the interests of your man, see that what he gets he gets in the cheapest and the best market, and get as close to the source of supply as you can. See that what goes to the cook-house the soldier gets, because there is no doubt that pilfering does go on, and pilfering will go on unless you exercise close and constant supervision. You may have a very fine grocery book which will answer all the requirements of science, but it does not fill the soldier's stomach. The last speaker but one said there was great difficulty in supplying fat. The soldier has a great repugnance to fat. As a rule, he likes butter, bacon, and dripping. Now, I can tell that gentleman how certainly a very large proportion of fat can be procured free of any expense to the soldier. I took the trouble for some time to superintend personally the saving of the dripping in my cook-houses. I gave the result to the lecturer, which I have no doubt he will gladly show. I found, on an average, I had considerably over 100 lbs. weight of dripping a week; that amount of dripping enabled me to give a free issue of 2 ozs. a man to the whole battalion once a week, and to supply them with suet for their plum puddings, for their pie-crust, and for their fish pies. Again, people have objected that Mullingar is a cheap place. So it is to a certain extent, but there are many cheaper. Vegetables are dearer in Mullingar than they are in almost every part of England, that is to say turnips, carrots, celery, and that sort. We used to get in England a pound for 4d., in Ireland you pay one penny for them. Onions we get in England at 4d. a pound, in Ireland they are 14d. Potatoes we have to pay 5d. a stone for, but if you ask in Mullingar from certain departments you will find that they are paying 8d. for almost the same potato. Milk, of course, is cheaper in Ireland, but when you have preserved Swiss milk for 4½d. you can make three quarts of very good milk, and can be perfectly certain it will be free from the adulteration which the lecturer has pointed out. American bacon costs the same everywhere, so do preserved meats and dried fish. As regards fresh fish Mullingar is very badly situated, but we get it. There was another question about the meat. I do not think that the Government do wrong in accepting a low contract. The terms of the contract are very plain and distinct; the meat must be good, wholesome, and well-fed. If a man contracts to supply that class of meat, he should be made to supply it. It is not the fault of the Government or of the person who drew up the contract, it is the fault of the man who receives it. I say the Commanding Officer is to blame if he

takes bad meat, and you may depend upon it if Commanding Officers would not take bad meat, the price of meat will go up, and the contractor will give the class that he has guaranteed to supply. There is an excellent substitute for butter in the shape of margarine, which can be procured at 10½d. per pound.

Dr. BALFOUR: I wish to call attention to an error in the paper with reference to the general greater prevalence of typhoid fever in the Army than in civil life. The author has forgotten in his calculation the marked difference in the age distribution of the men—that in civil life there is a much larger proportion between thirty and forty-five than there is in the Army, but when a man reaches thirty he has very nearly passed the limits within which typhoid fever generally prevails. To estimate it properly it ought to be calculated upon an age distribution in civil life corresponding with that of the Army. There is another point to which I should like to call attention, and that is the necessity for a more careful inspection of all stores delivered for the use of the soldier. When I was at Netley, I had at that time 400 men of the Army Hospital Corps who were being drilled and trained. I looked very carefully to the supplies furnished for them, and I found the coffee which was supplied for their breakfast contained 40 per cent. of chicory. I objected to it, and through the Control Department, then the Supply Department, of the hospital, I got the contractor to furnish the coffee in the bean, roasted. After one or two bags of coffee had come in, I found that he was sending in coffee beans in which there was scarcely any substance at all; it was almost simply the shell of the bean. Of course, I condemned it, and then he threatened to revert to the supply of it ground, which was what he contracted for. I merely called his attention to the penalty for adulteration, and during the remainder of the time I was there we got an extremely good coffee bean supplied for the men. I may also mention with regard to the tricks of contractors that one day we found some meat which had been sent in for the use of the hospital, and condemned, was being quietly smuggled in through the back door to be supplied again. I had it immediately seized; I sent for the Health Officer of the district, and had it condemned and buried, and I do not think the butcher tried the trick over again. The importance of attention to cooking cannot be over-estimated. When I was appointed to the Duke of York's School, I found the boys in a very low state of health. One of the first things I did was to attend to their dieting. I found the cooking was as disgraceful as it possibly could be. In the course of twelve months, with an increase to the amount of food supplied to the boys of only 2 ozs. a week, I got them into thoroughly good condition, and it was, I believe, very much the result of two things, first, that I introduced more variety into the dietary, and next that I took care that it was most thoroughly and efficiently cooked.

Surgeon-General MASSEY: With regard to the 4-lb. loaves, I may state that the Committee recommended that they should be 2-lb. loaves. I do not wish to enter into this matter at all, because being on the Committee I may be supposed probably to say things that I ought not, and to give the opinions of the Committee. But that is one point, that these 4-lb. loaves have now been made into 2 lb. loaves, and the cost of that has been 5,000*l.* a year.

Lieutenant-General Sir R. HUME, K.C.B.: The great value of this lecture, apart from its inherent ability, is that it tends to show the public the interest that is taken in the well-being of the soldier. I think the more care that is taken of the soldier after he has enlisted, the better. The lecture we have had to-day, and the discussion that is following it, will have a very great effect on many people outside, who really are entirely ignorant of what is done with the soldier after he has enlisted. Since I have been unemployed, in a military sense, I have had the opportunity of meeting many more people out of the military track than I ever did before, and it is astonishing the utter ignorance that prevails through nearly the whole of the English nation as to the social state of the soldier after his enlistment: they really seem to know nothing about it. Therefore, I think this lecture to-day, in continuation of the many lectures that take place here on different military subjects, will be a most valuable one. With regard to some of the things the lecturer has stated: in the first place I can quite understand his remark about cooking; what he wishes is, that the knowledge of cooking should be more general and not confined to the trained cooks, who, I must say, are admirable. It would

certainly be a very great thing if individual soldiers were more trained in cooking. But then there are so many things they have to be trained in nowadays that they really have not got time for everything, and you must delegate the cooking in a regiment, as far as I can see, to a certain number of trained men. Of course, the more you can extend the education the better. I was at Portsmouth a short time ago with my old regiment (55th, now 2nd Border Regiment), and the Quartermaster, who was Quartermaster in my time, took me to the cook-house, and to see the men's dinners, with great pride, because, he said, "We used to think in your time that we cooked pretty well, but I think you will see a great change for the better now," and I did. I saw the men getting fed in such a way as they never had been in my time, although I thought they were not badly cared for then. There is not the slightest doubt that there has been a great improvement in the cooking. With regard to the things that are not supplied by the Government, of course, as Colonel Burnett said, you must depend on your local supply entirely. All these are details which are carried out by Officers commanding regiments. With reference to the Officer who spoke a short time before Colonel Burnett, I did not understand him to wish to say anything at all offensive to Colonel Burnett, but what it struck me he meant was, that this is a point which is attended to by many Commanding Officers. I do not think it was meant to say that Colonel Burnett had thrust himself before the public in any way, but it was merely remarking that it was not confined to one Officer. With respect to the whole subject before the meeting, I do not think that there is any of greater importance, or, as I said before, whose consideration will have a better effect on the outer public, and through the outer public on the Army, than the question we have discussed now. The Army is now getting out of its very young soldier state, and it appears to me that the rules for enlistment and for service now, if they are looked at, will be found very different from what they were eight or nine years ago. Many soldiers now have an opportunity of becoming old soldiers, which they had not then, and I am glad to see, as far as I can understand, that the time of service of the men in the Army is gradually returning to a much longer period than it was some few years ago, therefore, we have not got to legislate entirely for a short service army, and I heard my old sergeant-major tell the Commander-in-Chief and the Quartermaster-General at Portsmouth the other day, when the Commander-in-Chief asked him about the meat ration: "The meat ration is entirely sufficient for the old soldier, but for the growing boys it is not sufficient." There was a remark made by an Officer about the excessive drinking in the Army. Now, from my experience in the Army and my experience of civil life, I do not think that drinking in the Army is in excess of drinking in civil life; but I think the amount of drinking detected in the Army is excessive in comparison with what is detected in civil life. This has always been my opinion, and I am very glad to have an opportunity of saying so to-day. I feel very much obliged to the lecturer for his paper, which I have no doubt will be of great use to many of us individually, as well as to the Service generally.

Major FERGUSON: I can assure General Hume I was not thinking of his regiment or of my own in adverting to the much drinking. I have only just come home from abroad, and I spoke more of regiments I have seen abroad, but, if I may take the opportunity of saying so, I did have the pleasure of seeing General Hume's old regiment the other day arrive in Portsmouth, and 300 total abstainers sat down to a tea, so that I know that his is a singularly sober regiment.

Brigade-Surgeon MACNELL: With regard to the bread supplied to the soldier, particularly at Aldershot, I should like to say a few words. Within the last few months 2-lb. loaves have been supplied to the soldier. These loaves are formed like cottage loaves, so that there is crust all round, the consequence is the bread is excellent. I attended before the Committee the other day and brought up two of the loaves, hospital bread and ration bread. I showed them to the Ration Committee, of which Surgeon-General Massey is a member. This bread was very good, in fact, you cannot get better bread. I eat the hospital bread myself always. The ration bread is not so palatable as the hospital bread, because it is made from seconds flour. The difference in the price of the two breads is 10d. per lb., and I think if ration bread were made from hospital bread flour, it would cost about 5,000l. a year more. I think if the bread were made in 2-lb. loaves, as it is at Aldershot,

that you could not get better bread, and the men eat it all. As an illustration of the difference in the bread now and what it was some months ago, I may say that from a battalion in Aldershot some time ago, 100 lbs. weight of bread was taken away in the swill-tub. I traced that bread from the swill-tub to the farmer who bought the swill, and I have seen strings of unbroken loaves in the swill-tub at this farmer's; he was feeding his pigs on the bread. I have also found in the farmer's yard a lot of baker's bread, which was taken away in the swill, which seemed to prove that the bread was wasted very much in the barracks. Therefore, I say, the purchase of bread out of the grocery money is not necessary. With regard to the cooking, I very often go round the kitchens, and I find at Aldershot, in the Central Infantry Block, where the cook's class is, the infantry regiment is fed much better than any other regiment in camp. The cooking is better and more varied. The King's Royal Rifles who are there now have a most excellent messing. Three days ago I saw their dinner. They had curries which were as good as could be. I then went up to the huts in the South Camp and looked at the dinners there, and the cooking was nothing like so good. There are two reasons for this: the first is they have not sufficient fuel, and the second is that they have not cooking arrangements enough to vary the dinners. Something has been said about the dress of the soldier. I think Sir Arthur Herbert said the soldier was very well clothed. I am sorry to differ from him. The civilian when he presents himself as a recruit wears clothing weighing from 7 to 11 lbs. 8 ozs. He comes in as a recruit, and we put him into a suit of clothing which weighs as low as 4 lbs. 8 ozs. Now I have weighed the clothing of recruits who come up to the Cambridge Hospital, young soldiers; the last clothing I weighed was in October, 1888, and one suit of clothing weighed 4 lbs. 8 ozs. (date of issue 1.9.87), another 5 lbs. 1 oz. (date of issue 1.6.88).

Sir ARTHUR HERBERT: What clothing had he?

Brigade-Surgeon MAUNSELL: A serge suit.

Sir ARTHUR HERBERT: They do not wear serge clothing in England at all.

Brigade-Surgeon MAUNSELL: That is what they come to hospital in.

Sir ARTHUR HERBERT: A line soldier?

Brigade-Surgeon MAUNSELL: A line soldier: he wears a kersey. This was a soldier of the Yorkshire Regiment. It does not much matter what you call it, but that is the weight of it. The correspondence is in the hands of Sir Evelyn Wood at present. It astonished me when I compared the civilian's clothing when he comes up to enlist and the clothing of the soldier as he presents himself at the hospital. The articles of clothing weighed were his kersey, his shirt, and his trousers.

The CHAIRMAN: I think I must ask you to remember that we are talking about rations, not about clothing.

Surgeon-Major NOTTER: I have very few words to say in reply. First as to clothing. What I meant to say was that the continual movement in working-men with the chest exposed was far and away less exhausting work than it would be if tied up in a collar such as we have now nearly lost, but not quite. Where there is free play of all the muscles the work done is far and away less than in the constrained position of ordinary drill. I did not want in the least to reflect upon the clothing, which for a soldier I believe is as good as it could be. In the same way as to monotony of diet, my remarks did not apply to the present day. I spoke more of monotony of diet in the past, and I did not mean to single out Colonel Burnett's system as being exceptional, but as showing the change that had latterly come over regiments, the interest Commanding Officers as a whole had taken in the subject of the soldier's food, and the results which had followed from their close attention to the matter. As regards the lowest contract, I may be mistaken, but I think it is in the "Commissariat Manual." I have not got it here.

Sir ARTHUR HERBERT: The Commissariat do not take the contracts, it is the Director of Contracts. All contracts of meat are made by the Director of Contracts. In the Commissariat you are quite right, but all contracts for meat in England are made by the Director of Contracts.

Surgeon-Major NOTTER: I did not mean meat alone, I meant contracts for flour, groceries, and for supplies in general, and I think there is a paragraph in the "Commissariat Manual," that is what made me say it. I think I showed pretty

clearly that there is ample fat in the diet given, 3 ozs. of fat in the day. There are actually 4,700 foot-tons of potential energy in that diet, and it is utterly unnecessary to supplement that with butter or anything else. I have also a statement here of the amount of dripping which was saved in February in the cook-house of the Royal Irish Rifles, Colonel Burnett's regiment; 378 lbs. 10 ozs. were saved during the month and distributed; this gave over an ounce of fat per man daily, and raised the fat up to the scale we have here, which is ample for every purpose. What Sir Robert Hume has said is quite true, the young soldier does not drink. I have had ample opportunity of seeing this. I was in camp where there were upwards of 3,000 of these young soldiers, and it really was the exception to find it. The young soldier spends his money upon food, as a rule, and not upon drink. The Army is a sober army as an army, I take it. Brigade-Surgeon Maunsell has simply followed up the principle that I suggested about the bread. Everyone knows the old bread, which had only tops and bottoms, of which the bottom was harder than a board, and the bottom generally went into the swill-tub. My object was that there should be a regular proportion between crust and crumb, which should as nearly as possible assimilate to what we get in civil life. I advocate no extraordinary change in the meat ration; the meat ration if properly used is ample, and there is no necessity to put the country to the expense of extra food for the soldier.

The CHAIRMAN (Sir T. Crawford): Gentlemen, as time is running very fast to the period at which the debates usually close, I will not trouble you with any general remarks with regard to the ration. There is one great advantage in these lectures, particularly when given by gentlemen who understand the scientific principles upon which men should be fed, that it does diffuse a certain amount of scientific information throughout a broad audience, and that is particularly the case with everything stated in this theatre. We have, fortunately, an exceedingly well-managed Journal, through which some admirable papers from time to time find their way into the hands of the whole of the Army, and it is a great advantage that this subject in particular should be dealt with here in a scientific as well as in a practical sense, and that it should find a record in the Journal. I would like to say one or two things in regard to the paper, as I am like some of the speakers who have addressed you this evening, not without some experience in the Army in this as well as in other matters, and in other countries as well as in this. I agree with those who have said it is essential to feed the young soldier well. I agree also that the ration in the main is sufficient, provided it be of good quality, and I thoroughly endorse what Sir Arthur Herbert and others have said, that it is in the hands of the Officers of the Army to secure that for the soldier without a penny more expense to the State. I agree also in everything that has been said about cooking. The Army is enormously indebted to Sir Arthur Herbert and others, who have taken an interest in establishing the School of Cookery, and managing it, at Aldershot, and I am only sorry that a suggestion of my own that all these depôts at home should have a first-class cook on their establishment was not carried out. I think it is one of the essential requisites of depôts of regiments at home that their kitchens and their cooking establishments should be unquestionably of the very best. I think also with regard to the distribution of meals, that if the soldier had three good meals at properly regulated hours, he would have all that the soldier really requires, and that he may have that Colonel Burnett has shown by his practical way of dealing with this question. I am sure the Army at large, and the audience in this theatre, will agree with me in saying that Colonel Burnett's agitation of this question, and the practical way in which he has looked at it, has done a vast amount of good, but I do not think anybody would think for a moment that the idea of advertising himself has had anything whatever to do with Colonel Burnett. The fact is his letter was so good that the Commander-in-Chief could not do otherwise than publish it for the Army, and the publication of that letter, and the discussion that has resulted from it, and the practical steps taken in consequence of its promulgation have already done much good in the direction in which reform is needed. With these very brief and cursory remarks I will ask you to bear with me while I propose a vote of thanks to the lecturer. I am sure we are indebted to any gentleman who will take the trouble of writing out a carefully prepared paper and laying it before such an audience as this. I will take it for granted that you carry this resolution by acclamation.

Wednesday, April 3, 1889.

GENERAL G. ERSKINE, Chairman of the Council, in the Chair.

THE RECENT CHANGES IN THE DRILL OF THE GERMAN ARMY.

By Colonel LONSDALE HALE, Ret. R.E.

IN the year 1872, shortly after the termination of the Franco-German War, the latest changes made by the Prussians in their Infantry Drill Book formed the subject of a lecture delivered in this theatre by the late Major E. M. Jones. In 1876, a new edition of the Infantry Drill Regulations of the Prussian Army and officially called a "reprint" of the old Regulations which bore the date 25th September, 1847, was issued to the Army. The leading features of the "reprint," and the alterations it introduced are given in a paper contributed to the Occasional Notes in the 88th number of the Journal,¹ by Lieutenant-General (then Colonel) E. Newdigate, now commanding in Bermuda. The Council of this Institution, when arranging the programme of lectures for the current session, had before them the desirableness of bringing the information on this subject up to the present time. They consider that the lectures delivered here should not only deal with matters of passing interest, but should be standard sources of reference in future years. Inasmuch then as a fresh edition of the Drill Regulations was issued in September of last year, and moreover the publication of this edition drew on it the attention and criticism of soldiers all over Europe, the Council determined to include in their programme a lecture on it. Most unfortunately, however, owing to causes to which it is unnecessary to refer, difficulties arose which resulted in the withdrawal of the lecture. Strongly impressed with the desirableness of this particular subject being brought before the members of the Institution, I undertook to obtain another lecturer. But the difficulty of finding one was very great, for English Officers who really understand technical military German are few and far between. It so happened, however, that I was aware that a brother Officer, an old friend of mine, who is a thorough master of the German language, had most carefully compared the old and the new Drill Book, and had reduced that comparison to writing. On stating my difficulty to him, he, whilst declining to lecture himself, most generously placed the results of his labours at my disposal, and those I am about to lay before you. I, gentlemen,

¹ See vol. xx, p. 719 *et seq.*

am this afternoon merely the mechanism of the telephone: the utterances are those of "one who knows," but for the correctness I, with perfect confidence, hold myself responsible.

At the outset it is necessary to impress on your minds the marked distinction between the edition of the Drill Book which we are considering to-day and the editions which preceded it. The earliest of the latter bears the date 25th September, 1847. In the German Army there exists, side by side, a keen desire for progress on the one hand, and on the other hand a clinging to the traditions of the past. Hence the edition of 1876, necessitated by the altered conditions of warfare, as shown in the campaign of 1870-71, was officially called a "reprint." It resembled a tree planted some thirty years before, on which had been grafted cuttings which would bear fruit suited to the military tastes and desires of later date. Consequently, that edition was full of anachronisms and modern ideas in strange juxtaposition, the former predominating, and the result being contradiction and consequent confusion. Practically, it contained two antagonistic and irreconcilable systems: one based on the war experience of bygone days, the other on that of modern war. Of the many illustrations of the predominance of the old ideas, one will suffice, that of the retention of the battalion directed by the battalion commander's word of command, as the tactical unit. Reference to the table of contents (Appendix No. 1) shows us that out of 195 pages dealing with the instruction and training of the individual soldier, the squad and company, the battalion and the brigade, 89 pages or nearly half are devoted to the battalion.

The retention of the battalion as the principal fighting unit was due to close formations being still regarded as fighting formations, and suitable for employment within reach of the enemy's fire. This becomes apparent from the numerous evolutions in close formation laid down for the battalion, many of which carry us back to the days of the Great Napoleon and the Peninsula, when, being admirably adapted to the tactical conditions of that period, they produced excellent results.

The much needed reform was initiated by the late Emperor, who did not, however, live to see the fruit of his labours, and it was reserved to his son, the present Emperor, to complete the work by the issue of a book which is not a reprint, not even an improved and revised edition; it is an entirely new creation, differing from its predecessors in many essential points and in most minor details. The statement of the Emperor's views regarding it runs as follow:—

"Berlin, 1st September, 1888.

"I issue to the Army these new Infantry Drill Regulations, in grateful memory of His late Majesty, my father, to whose initiative their production is due. Their object is to produce a larger scope for war training, maintaining at the same time the discipline and order which have been handed down to us.

"The advantage gained by the simplification of many of the formations must on no account be nullified by any one, either by verbal

or written additions to the Regulations for the purpose of obtaining increased outward uniformity, or for any other reasons.

"The freedom purposely conceded in the training and its application should in no way be limited by any restrictions affecting the principles of these Regulations.

"I am firmly resolved to punish with dismissal any contravention of this my will.

"Any infringement of the provisions of Parts I and III will meet with severe censure, while any misapprehension of Part II should be rectified by means of instruction.

(Signed) "WILHELM.

"To the War Ministry."

It is interesting to notice the influence of the national spirit in these Regulations. Having effectually shaken off the yoke of their enemies, the Germans are determined to get rid of the last trace of the French domination by purging their language of all germanized French words, thus carrying into effect the spirit of these German lines :—

Willst du ein echter Deutscher sein
So sprichst du deine Sprache rein.

freely rendered—

Wilt thou be a German true
Cleanse thy language thro' and thro'.

There is even a marked progress in this respect, since the issue of the "Field Service Regulations, 1887."

The following are some instances of this change :—

Old word.	New word.
Honneurs	Ehrenbezeugungen.
Attacke	Sturm.
Avertissement	Ankündigung.
Engagement, action ..	Gefecht.

There is one word of foreign sound and curious application still retained—i.e., "chargiren"—in the words of command for firing.

Most striking also is the systematic and logical recasting the work has undergone. Its arrangement and teaching are as lucid, simple, and concise as those of the old book were complicated and diffuse. It moreover numbers 57 pages less.

But if one thing more than another shows the completely new departure taken, it is the relative amount of space allotted to the drill and exercises of the several units in the book of 1876 and that of 1888. A brigade consists of 3 or 4 regiments, a regiment of 3 or 4 battalions, a battalion of 4 companies, a company of 3 züge, the company being about 200 strong. Look now at the comparative statement in the table :—

	No. of Pages.	
	Old.	New.
Individual Training	35	31
Zug	0	22 $\frac{1}{2}$
Company.....	37	17 $\frac{1}{2}$
Battalion.....	89	10
Regiment	0	7
Brigade	35	5 $\frac{1}{2}$

In itself the table is a revelation. Leaving out of consideration the item individual training, which remains as before, we see that to the regiment a few pages are given, but the brigade retains but one-sixth or one-seventh of its former importance, the battalion only one-ninth. The reason of this is that henceforth the company is the only fighting tactical unit, and battalions, regiments, and brigades are regarded on the battle-field merely as concentrations and assemblages of the fighting units, the companies, whence they may be drawn for the purposes of the combat. And the reduction of space allotted in the book to the company, as a whole, is more than made up by that given to its third, the zug, the lowest unit under an Officer's command, and consisting of some sixty-four men which, hitherto unrecognized, now springs into the first place.¹

The subjects connected with the forming, handling, and legitimate employment of the soldier are divided into three parts:—I, The School; II, The Fight; III, Parades, &c.

Out of a total of 169 pages, he is taught his lessons in "The School" in 80 pages, he is shown how practically to apply these lessons in "The Fight" in 52 $\frac{1}{2}$, and in 27 $\frac{1}{2}$ pages Part III provides for the few necessary show parades inseparable from the profession of arms.

Part I, "The School," is further subdivided into six sections, one for each link in the military chain, that may be called upon to bear the strain of war and act independently as a fighting unit. These are—A, "The Individual Soldier;" B, "The Zug;" C, "The Company;" D, "The Battalion;" E, "The Regiment;" and F, "The Brigade."

The training of the individual soldier consists of instruction with and without the rifle, and as a unit of the fighting line. That of the zug and company, in which everything connected with the actual fighting is done, consists of instruction in close and extended formation.

The key to Part II, "The Fight," lies in the number of pages respectively taken up by the three subdivisions composing it. The total number devoted to "The Fight" is 52 $\frac{1}{2}$. Of these nearly three-quarters are allotted to the first subdivision dealing with "General Principles." The second subdivision treats of the fight of the several tactical units, "The Company," "The Battalion," "The Regiment," and "The Brigade," and is contained in 13 $\frac{1}{2}$ pages, each unit taking up about the same amount of space, the company having the largest

¹ By "unrecognized" is not meant that the zug itself did not exist, but that as a fighting unit it was not recognized in the Drill Book.—L. A. H.

number with 4 pages. The "Concluding Remarks," not the least remarkable part of the book, occupy 3 pages, and form the third and last subdivision of Part II.

Even Part III, "Parades, &c.," which bears a certain resemblance to its obsolete predecessor, has not been left untouched by the hand of the reformer. It comprises four parts: (A) The Parade, (B) Taking out and replacing the Colour, (C) Bugle Calls, (D) Brass and Reed Bands.

The Preface, the three Parts, and the three Appendices, No. 1 Bugle Calls (21), No. 2 Drum and Fife Marches (12), No. 3 Sundry Calls on the Drums and Fifes (12), make up the contents of the German Infantry Drill Regulations, 1888.

The object throughout these Regulations, which becomes particularly apparent in this part, is not to seek to provide for every conceivable contingency, thereby burdening the memory with numberless details, but rather, thoroughly to furnish the mind with sound principles of general application. That is the clue to 36 pages of 56½ being devoted to the general principles, in this most important part of the German soldier's instructions. There is no "Rule of Thumb" work here. Here we find nothing but living principles, deduced after much thought and labour from real modern war, not by the theorist, but by the practical soldier who has proved his quality in field and cabinet, requiring the exercise of reasoning powers and application of judgment and common sense.

Drill and Training.—No better introduction to the drill and training of the German Army could be found, than that given in the book itself, from which the following is an extract:—

1. The object of drill is to train and prepare both Officers and men for war. All exercises should therefore be in conformity with war practice. The most important requirements of war are strict discipline and order, together with the utmost exertion of physical and mental powers. The development of these qualities to such a degree that they become a second nature to the men, is one of the principal objects of all exercises at drill and field practices.

It is only by simplicity that results are ensured in war. It therefore becomes merely a question of mastering and practically applying a few simple formations. These, however, should be practised with strictness, and directed with certainty and precision. The provisions of the Regulations deal solely with normal formations, and are unconditionally binding in their spirit and letter, in peace as in war. All artificial elaboration is prohibited.

2. All commanders of troops from the Company Commander upwards, are responsible that the training of the units under their command is carried out in accordance with the Regulations, and they should therefore be restricted as little as possible in the choice of means. Their immediate superiors are *in duty bound* to interfere the moment they notice any errors or shortcomings.

Each section of Part I we shall now deal with in succession, commencing with Individual Instruction, and taking then the *zug*, the company, and then leading on to the brigade.

PART I.—A. *Individual Instruction.*

The spirit of the training imparted is aptly described in the last clause of the concluding Remarks to Part II: "The training of troops may properly be considered as successfully accomplished, when they are capable of performing what is required in war, and when no part of what has been taught on the drill ground has to be laid aside on the battle-field."

In the old Regulations the instruction of the individual soldier was scattered over Parts I, II, III, and IV; the whole of it is now embraced in Part I, Section A. Every section and subsection that requires it, is preceded by pithy "General Remarks." These shall be given in full.

§ 1. "The careful and strict individual instruction which should be conducted concurrently with the physical training prescribed in the Gymnastic Regulations, is the foundation of the soldier's training as a whole. The requisite combined action of numbers can only be attained by the thorough instruction of the individual. The faulty and incomplete instruction of a recruit, as a rule, affects him prejudicially in the performance of his duties, during his entire service. Faults which are allowed to creep in during the initial stages of the instruction, are rarely completely eradicated. It is likewise impossible to remedy defective instructions by means of combined practices."

These words, together with the amount of space allotted to this subject, give us an inkling of the importance attached to this first moulding of the young soldier,¹ and a further examination will convince us as to the soundness and practical character of the instruction imparted.

Appendix No. 2 shows us what has been abolished in this portion.

With a view to lessening fatigue on the march, the command "Ohne Tritt," or "Out of step," is given. The men are thereby relieved from the necessity of accurately keeping the Regulation step. The normal distance (from back to breast) between ranks is then increased from 0·64 to 0·80 m. (25—31½ inches). The men, however, maintain the regulated pace, an orderly bearing, and their proper places in the ranks. On the command "Tritt gefasst," or "In step," the ordinary step and distance is resumed. In marching off "out of step" the command is "Ohne Tritt—Marsch," or "Out of step—March."

With regard to instruction in "Firing," the most important portions of the Musketry Regulations bearing upon the effective use of the rifle in action, with which it is essential the soldier should be perfectly familiar, are inserted bodily in the new Regulations.

In peace-time, bayonets are no longer fixed, and it is considered sufficient that the soldier should be instructed in "fixing" and "unfixing;" the object being doubtless to save the rifle. On all occasions, however, in which bayonets would actually be fixed in battle, the order to "fix," either by command or bugle-call, should invariably be given, without its being carried out by the men.

The most important part of the training, being that for the fight in

¹ See "The Training of the German Recruit," in No. 147 of the Journal.—Ed.

extended order, let us hear what the "General Remarks" have to tell us as to the methods adopted :—§ 64—66. "In order to render the recruit familiar with the rudiments of the independent use of the rifle, it should be placed in his hands a few days after he joins and before being instructed in the manipulation. The instruction on the several parts of the rifle and their combined working, should go hand in hand with that in loading, the firing positions, and aiming.

"After the soldier has made some progress in loading, the firing positions, and in carrying the rifle at the slope, and after he has obtained a clear grasp of the first principles of subordination, the instruction in extended order fighting should be proceeded with.

"For this purpose, he should be made to acquire the rudimentary notions of the nature of fighting in extended order, by affording him opportunities of observing the working of small parties of older soldiers, over easily accessible ground.

"His zeal for, and powers of understanding the highest objects of his calling, should then be stimulated and sustained, by making him take an active part in representations of the simplest phases of the fight.

"His duties in the attack and the defence, and the manner of turning the nature of the ground to account in increasing his own fire action and reducing that of the enemy, should be taught him by means of an opposing force, at short ranges to commence with.

"These exercises can be carried out at all times of the year, on the field-practice ranges and on the drill ground. After the recruit has served two or three weeks, he should be taken out for this purpose into the country at least twice a week. This is a decidedly beneficial change during the period of formal drill instruction, which can best be furthered by the recruit bringing with him a certain insight into the practical application of the extended order formations practised on the drill ground.

"In regulating and directing these field practices, the difference of the demands made upon him in the formal exercises principally connected with close formations, and those connected with extended formations, should be explained to him.

"Plenty of time should be allowed for the careful and thorough training of the soldier, as it cannot be effected if the course of instruction is unduly hurried over and repetition is to be avoided.

"It will soon become apparent which men are particularly smart. The greatest attention should be devoted to the training of these men with a view to appointing them *zug* and section leaders in due course. Awkward men must not be permitted to retard the progressive instruction of the class they belong to."

It is laid down, that the men should be practised in surmounting obstacles of all descriptions, and be thoroughly trained in taking advantage of cover. They should, however, be taught that in the majority of cases the straight way is the best way, and that a considerations as to cover should give way to those regarding fire action.

Theoretical musketry instruction and judging distances should go

hand in hand with this part of the instruction, followed by blank and ball firing.

PART I.—B. *The Zug.*

Now, for the first time, the zug is given its legitimate place in the Drill Regulations. It is recognized as a real fighting unit, and assumes its duties and responsibilities. On the completion of the individual training of the recruit, say the General Remarks, § 81, he is formed up with several others in line, files, sections, and is prepared, by being exercised in züge, for taking his place in the company, in close as well as extended formation. In the zug as well as in all larger units, the same certainty and order should prevail, whichever rank may be in front or whichever flank is leading. The zug should also be able to execute all regulation movements in perfect silence even when in an unusual order, with files intermixed (termed "unrangirtes exerziren" or drilling in "mixed order"), "in step," and "out of step."

The zug, formerly the half (in close formation) is now the third of a company, and is commanded by subaltern Officers, called zug leaders.

It is now formed in two ranks instead of three, both sized from the right, the tallest man of each file in front. The lateral space occupied by the soldier in the ranks is not laid down. It is merely stated that he should in all cases, even on parade, have a light touch of the elbow with his right and left-hand men. This will enable him to fire and execute all his movements in the ranks without constraint.

A zug of sixteen files and over is divided into half-züge, and the half-züge again into sections, which in extended order are called groups. A zug of fifteen files and under is not subdivided into half-züge. In either case the section should not consist of more than six or less than four files. The sections are numbered from the right of the zug. The zug leader stands in front of his zug when working alone. A flank non-commissioned officer is placed on either flank of the front rank, the remaining non-commissioned officers two paces from the second rank, standing in rear of the last file of the section they command in extended formation.

The evolutions performed by the zug in close formation are shown in Appendix 4.

The dressing is always by the right (unless specially ordered otherwise). The men are practised to form up rapidly on points (the flank non-commissioned officers) or on files. A good advance of the zug in line over considerable distance, is considered the foundation of all movements in close formation. In file marching, the front rank directs. Marching in file is used for short distances only, as it entails great exertion, having to be executed "in step" so as to retain the proper distances.

There are two new terms, "Ziehen,"⁶ to denote the diagonal march, and "Hakenschenkung," a change of direction in column, each component part wheeling in succession on reaching a given spot.

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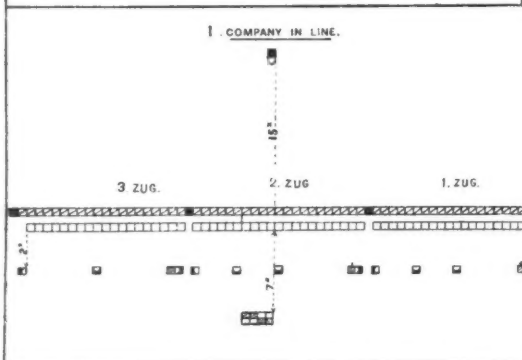
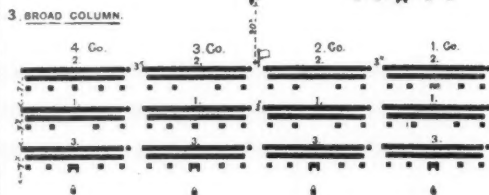
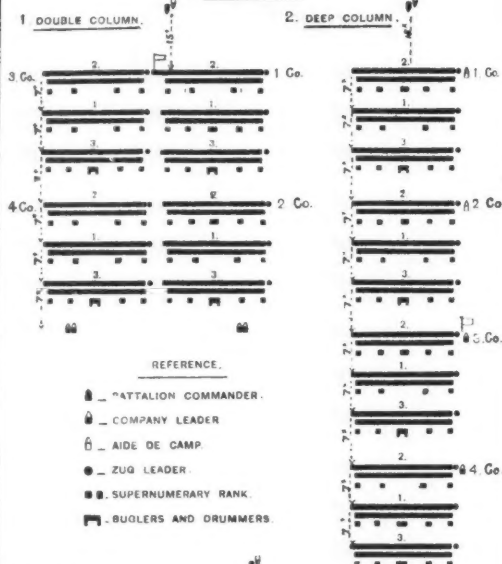
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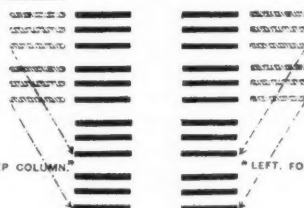
No. II.

THE BATTALION. NORMAL FORMATIONS.



FROM DOUBLE COLUMN

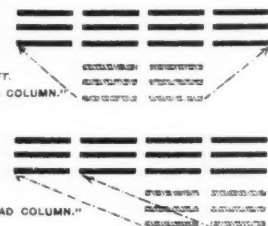
1. TO DEEP COLUMN



"RIGHT. FORM DEEP COLUMN."

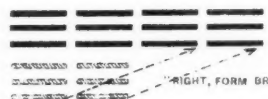
"LEFT. FORM DEEP COLUMN."

2. TO BROAD COLUMN



"RIGHT AND LEFT. FORM BROAD COLUMN."

"LEFT. FORM BROAD COLUMN."



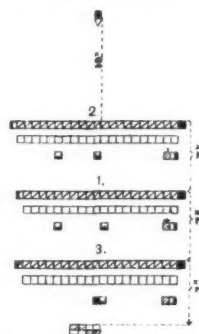
"RIGHT. FORM BROAD COLUMN."

No. I.

THE COMPANY. NORMAL FORMATIONS.

REFERENCE.

2. COMPANY IN COMPANY COLUMN.



- COMPANY LEADER.
- LIEUTENANT.
- COMPANY SERG.-MAJOR (FELDWER).
- CADET (PORTEPEEFÄHRICH).
- ASSISTANT COMPANY SERG.-MAJOR.
- SUPERNUMERARY N.C.O.
- RIGHT GUIDE.
- LEFT GUIDE.
- FRONT RANK MAN.
- REAR RANK MAN.
- BUGLER.
- DRUMMER.

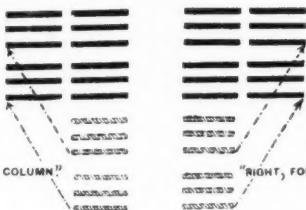
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No. III.

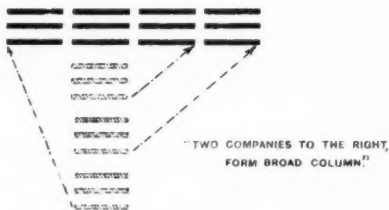
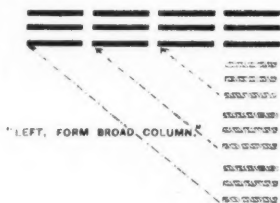
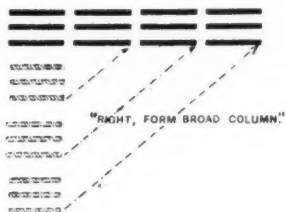
THE BATTALION.
CHANGES OF FORMATION.

FROM DEEP COLUMN.

1, TO DOUBLE COLUMN.

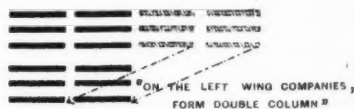
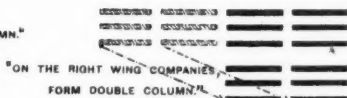


2, TO BROAD COLUMN (ALWAYS ON THE LEADING COMPANY).

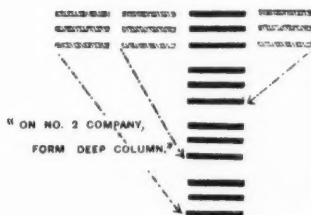
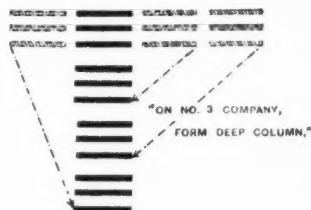


FROM BROAD COLUMN

1, TO DOUBLE COLUMN (ON ANY TWO NAMED COMPANIES).



2, TO DEEP COLUMN (ON ANY NAMED COMPANY, COMPANIES ON THE RIGHT MOVE IN FIRST).



THESE CHANGES OF FORMATION ARE EXECUTED AT THE HALT AND ON THE MARCH. THE COMPANIES MOVE INTO THEIR PLACES BY COMMAND OF THE COMPANY LEADER ON THE BATTALION COMMANDER'S WORD.



The Zug in Extended Formation.—(General Remarks.) “In training men for fighting or extended order, it is likewise not expedient to pass suddenly from individual instruction to that of the zug. Practices in files and groups should rather precede it. By them the soldier is first taught his functions as a unit in the fighting line, in which he has not only to respond to the leading of his group leader but also to consider the men on his right and left in his movements.

“Whereas a single soldier moving freely over the country will be able to find plenty of cover and is permitted to do so, the zug and still more the larger units, are only able to avail themselves of this advantage under certain circumstances, which it is the duty of the leaders to make the most of. Considerations regarding cover should on no account interfere with the uniform movement of the whole. For this reason alone the successive and connected movements of fighting lines form a very important subject in the training.

“The difficulty of execution increases with the extension and density of the line. At the commencement these exercises should be carried out with shorter lines at greater intervals of extension.”

Movements in extended formation are performed, as a rule, at the ordinary pace—only exceptionally at the double. In the advance by rushes, the space covered each time should rarely exceed 80 m. (87 yards).

The movements of a zug in extended formation are :—

1st. Advance and retirement of the zug or portion of it.

2nd. Moving to a flank by the diagonal march.

3rd. Change of direction by the indication of a new point to march on.

Movements to a flank, in file, should be avoided. A rigid adherence to dressing and intervals should not be required.

“The men are to be distinctly instructed to close up or open out for the purpose of availing themselves of cover.”

“The only thing to be considered with regard to dressing is, that the several portions of the fighting line do not interfere with one another in their movements and fire.”—(Part II, 26, 27.)

The extension may be at the halt or on the move. When extending, the rear rank men move up on the right of their front rank men. The interval of extension, unless specially ordered otherwise by the zug leader, is from one to two paces. Units in extended order march by their centre.

An extension, during a movement to the rear, is performed at the halt and facing the enemy.

Each group is commanded by a non-commissioned officer. The zug and group leaders place themselves in front of their respective charges, and, if possible, one or more non-commissioned officers are kept in rear of each zug, to superintend its movements.

Fire is only opened by a fighting line, when in position. It is only in exceptional cases that firing is allowed on the move. The instructions as to fire action, fire leading, fire discipline, the different kinds

of fire, and the observation of fire effect, are all extracts from the Musketry Regulations.

Sights should be adjusted with the greatest care during all practices.

The extended zug, when closed, forms up in line. If the zug leader continues to advance, the closing is carried out on the move.

The change of front of extended lines, by wheeling or on files, is abolished, and a change of direction is effected by indicating a fresh point of direction. The relieving of a fighting line is no longer provided for.

PART I.—C. *The Company.*

Instead of 37 pages in the superseded Regulations, the Instructions on Company Drill and Fighting only take up 17½ pages in the new book. Its independence as a training and fighting unit has, however, been largely increased. The preface says, in para. 3: "The mastering of the actual drill should be accomplished in the company." The simplification this drill has undergone, has been most thorough and practical.

The company is composed of three züge, and each zug into two half-züge. The züge and half-züge are numbered from the right of the company. A footnote states that it is advantageous if this subdivision of the company into züge, half-züge, and sections is adopted and maintained, for purposes of interior economy, and if the men of a company are as much as possible of the same size.

As to its capabilities, the "General Remarks" say (§ 143): "The company should be so thoroughly trained, that it may remain under the control of the company leader under all circumstances, and that by paying proper attention to his orders, it may be able to carry out even what it may not have practised previously." The two normal close formations of the company are given in Diagram No. 1. (See Plate.)

The distribution of the Officers to the züge, is left to the Company Commander. The movements of a company in close formation are of the simplest description, as will be seen by referring to Appendix 4.

The distance between züge in company column, and between companies in battalion column is always seven paces.¹ In half-zug column, the full distance of seven paces should be gained when moving outside the sphere of the enemy's fire. When required to reduce the depth of the column, it is reduced to four paces.

All changes of formation into and out of company column are executed "out of step."

The dressing is always by the right, unless otherwise ordered. When two züge are marching in line, the dressing is by the centre zug leader.

In dressing up or taking up an alignment, the points given are two zug leaders and the outer flank Officer.

Company Square.—This company square is formed at the halt. The leading zug is halted, the next zug wheels outwards and forms the

¹ Measured from front rank to front rank.

side faces, the 3rd Zug closes up and forms the rear face. It is the last vestige in European tactics of a formation, which the Germans consider so well calculated to delay and restrict the development of the highest fire action at the most critical moment, and to co-operate with the enemy's cavalry in its endeavour to provide a good target for its artillery.

The Regulations say: "Complete regularity in the formation of square is not to be required, but prompt readiness to open fire in any direction must be insisted on." This condition of promptness in forming square and opening fire is more easily attainable in this comparatively small unit, which, moreover, forms a relatively small target for guns.

The ordinary movements in square are provided for. The occasions on which the square may be used are laid down in para. 50, thus: "The adoption of the square formation can only be considered suitable, when required by special circumstances, such as when the troops have expended their ammunition; when they have been severely shaken by heavy losses during the fight; or when compelled to retreat over open ground, in the presence of threatening cavalry, superior in numbers. Infantry engaged with cavalry should bear in mind, in all other cases, that the latter are justified in counting it as an advantage gained, as soon as they succeed in compelling them to discontinue their movements and to assume formations which will interfere with the development of the most effective fire-action."

The firing of a company in close formation may be delivered in line, company column, and in square. Volleys are delivered by companies or by züge. The zug leaders place themselves in rear of their respective züge, and call out their numbers before ordering them to fire. A company column at the halt may close up, so as to fire four deep. In square, volleys should, as a rule, be used, the side of the square required to fire being named.

Bayonet Charge.—The instructions commence with these words: "Should the company be required to charge in close formation," as if to indicate the unlikelihood of such a proceeding. The company comes to the charge and breaks into the "Storm March." At a distance, dependent on the circumstance of each case, the company is ordered to double and cheer. The drums beat the "Storm March" (the fifes do not play). After securing the position, the leading züge make ready and wait for the command to open fire on the retreating foe. In an unsuccessful attack, the troops in close formation and the fighting line retire simultaneously, the former in the strictest order and "in step."

The Company in Extended Formation.—The training and movements of a fighting line are fully dealt with in the zug instruction. Those for the company are limited to (1) Extension, (2) Reinforcing, (3) Support, (4) Assembly, and that only briefly.

Unless otherwise ordered, entire züge move out on the command "extend." In company column the leading zug, in line any named zug. The remainder of the company forms the support in line or column, and does not move off until the fighting line has gained the requisite

distance. An interval of seven paces is maintained between züge in the fighting line.

The fighting line is reinforced by command of the company leader, either by the insertion of fresh züge into the line itself, or by prolonging it. In the former case, the zug ordered to reinforce extends at once, and makes direct for the interval between the züge or any existing space in the züge already extended. An intermixing of züge is here candidly acknowledged as unavoidable, and, as far as possible to mitigate this evil, it is directed that the company should be practised in assuming fresh subdivisions, the zug and group leaders dividing the line between them.

How different from the unbending spirit of the old Regulations! These say (page 68, § 39, Chap. VIII): "For the sake of preserving unity of command, in reinforcing and reducing the skirmishing line, the original züge and sections should not, where possible, be separated, they should not, in any case, however, be intermixed." The same principle in other words is enforced on page 143, § 103, and page 187, second paragraph.

The Support.—"The portion of the company remaining in close formation serves for the extension of the fighting front, the support of the firing line and the protection of its flanks." These considerations regulate its position.

Its distance from the fighting line depends upon circumstances. No fixed rule can be given. The main consideration is the timely support of the fighting line.

For practices in which the nature of the ground is not taken into account, the distance should be about 150 paces.

The support, formed in column or line, marches without keeping step, and conforms to the movements of the fighting line. When under the enemy's effective fire, it marches "in step," and every change of formation is avoided. At the halt, the support lies or kneels down.

On the company leader's command to assemble, the züge, having rallied on the zug leaders, assemble in company column in rear of that portion of the company still in close formation. The company is to be practised to assemble in company column, line, and column of sections with silence and rapidity at any appointed place.

The principal alterations are shown in Appendices 2 and 3.

PART I.—D. *The Battalion.*

The 89 pages devoted to the battalion in the Regulations of 1876 are reduced to 10. This includes the instructions in Part II for procedure in action. This reduction is due to several causes: 1st. The individual instruction and that of the company are relegated to their proper place. 2nd. The relative position of the battalion in the chain of military units has been modified considerably. It is, of course, still one of the most important "units of command," but its character as a "fighting unit" has been changed. The former duties in action of the battalion as a whole, now devolve on the four companies of

which it is composed. Their actual handling when in the fighting line, is taken out of the hands of the Battalion Commander, and rests entirely with the company leaders. This is expressly stated in the last three lines of this section, page 82, § 219: "The direction of the fight in the extended fighting line, rests with the companies." The Battalion Commander's duties are very clearly defined, and he has ample scope given him to make his influence advantageously felt in action, without interfering with those who have actually to do the work.

The Preface says: "The battalion is the training school for the fight. The whole system of infantry fighting is based on the co-operation of the several companies with one another in the various phases of the fight:" and again, "Battalion drill, now only embraces close formations."

The Battalion Commander now tells his four company leaders *what* he requires to be done, giving them each their share of the task, but he refrains from telling them *how* to do it. In fact, if that were habitually necessary in any particular case, the Officer concerned would not long be allowed to remain in the German Army. These are the "General Remarks," § 197: "The battalion, composed of four-company columns must be able to execute the simple formations required in war on the command of the Battalion Commander, under all circumstances, with regularity and certainty."

The Battalion Commander delivers either both the cautionary and executive words of command or only the former. Cautionary and executive, when simultaneous execution by the companies formed up in either of the three normal battalion formations is required. In all other cases, the Battalion Commander delivers only the cautionary command.

The change from one formation to another is executed, as a rule, at "the slope." If not otherwise ordered, the companies at once "order," "Stand at ease," and take up their dressing on reaching their places.

On the drill ground, the movements in the normal formations and the change from the one to the other are executed in step. The deployment for the fight takes place either with or without keeping step at the Battalion Commander's discretion. All other company movements are executed out of step. When under the enemy's effective fire the marching is to be in step.

The natural consequence of the battalion having practically dropped its character as a unit in the fighting line, is that battalion drill has been completely revolutionized. Battalion fighting formations no longer exist. The formations of a battalion are simply close formations intended for the convenient assembling of large masses of troops. Appendix 5 contains a complete list of battalion movements.

Companies in battalion columns are invariably formed in company columns. The battalion is drawn up in mass or line of company columns according to the space available and the object in view. The order of the companies is immaterial. They move into column by command of the company leaders, by the shortest way.

Dressing and Covering.—At the halt, the dressing is by the right;

on the move, by the colour, in broad and double column; and by the right in deep column.

In broad and double column the "Points of formation" are the colour, the zug leaders of the leading units, and the left flank non-commissioned officers. In deep column, the zug leaders and the left flank non-commissioned officers.

In broad column, files must maintain their own covering; in double column, the zug leaders and left flank non-commissioned officers look to the covering. In deep column, the zug leaders cover.

Motions with the Rifle.—The motions with the rifle and loading are not practised when the companies are formed up in battalion columns, except when it becomes necessary for the sake of uniformity.

Deployment of the Battalion for Action.—The manner in which the companies enter into action may vary considerably. Generally the companies will be inserted into the fighting line as required, the remainder being kept in hand by the Battalion Commander. But circumstances may require the simultaneous deployment of all the companies from the very commencement. Such deployments to the front occupy the shortest time when performed at the halt. The order for the deployment should indicate the company of formation as well as the intervals and the relative positions of the several companies. As a rule greater depth than breadth will be given to the original deployment, the fighting line will be reinforced gradually, and at least one company will be retained in reserve.

The movements of a battalion when deployed for action are regulated by indicating a common point of direction. A company of direction should only be named, when there is no point of direction. A change of direction is effected, by indicating a fresh point to march on.

If a change of front is to be effected, the new front will be pointed out, and the companies wheel up independently into the required direction. The relative position of the companies is thereby changed. This may be regulated by further orders.

The companies are reassembled in battalion, as a rule, on the march, otherwise at the halt, in the shortest way, on a named company, in one of the normal formations suited to the occasion.

The adoption of fixed formations to meet given cases, is prohibited.

A complete list of the changes made in battalion drill is given in Appendices 2 and 3.

The principal formations, &c., laid aside are—

1. Battalion line and linear tactics.
2. Columns of various distances.
3. Battalion fighting formations.
4. Attack in close formation.
5. Battalion square.

PART I.—E. *The Regiment.*

The old Regulations contain no instructions for the regimental "unit of command." In the new Regulations, it is given its proper place, and takes up seven pages.

To quote the preface, "Regimental drill embraces merely formations of assembly," and "The uniform education necessary for undertaking the duties connected with the training and leading of troops is imparted in the regiment. Regimental exercises are a preparation for the duties of higher commands."

General Remarks.

A battalion should be able to perform all the regulation battalion movements with precision, not only when alone but also in combination with other battalions. This is attained, by practising the regular and prompt forming up from column of march, into assembly or fighting formation, as well as those movements which are carried out with larger units. It should, however, be borne in mind, that uniform movements in close formation but rarely occur in war, and only admit of uniform execution within the battalion. They should therefore be restricted to the simplest description.

The Regimental Commander only gives cautionary words of command or orders, on which the Battalion Commanders deliver the necessary commands.

Assembly Formations of the Regiment.—Battalions are as a rule formed up in one or more lines of double columns.

If the regiment is composed of three battalions, and is formed up in two lines, one battalion is placed in the centre of the interval, either in front or in rear of the two others. If composed of four battalions, the battalions in second line cover those of the first. In the normal formation, battalions are placed in numerical order in each line, but any order is admissible. The intervals are twenty and the distance thirty paces (clear space). Whenever required for any special object, the battalions, in any of the three normal column formations, may be drawn up in any manner desired.

Movements in Assembly Formation.—These consist of simple movements to the front and rear, wheels and marching to a flank, and will be executed in accordance with the instructions laid down for the battalion.

For the initial movements, a battalion of direction will be named. The leading züge of all companies abreast should retain their dressing; this is not required in the case of the succeeding züge.

When the movement is carried out "in step," each battalion keeps its own step.

Changes of front (not greater than one-eighth) are carried out on a named battalion, which after wheeling up, advances column depth and halts. The remainder move into position by the shortest way. If the regiment is formed in two lines, the first advances the depth of both lines after wheeling, and the remainder take post in the shortest way.

Deployment for Action of the Regiment.—The fundamental consideration in the deployment of a regiment for action is the retention of the deep formation. The manner of deploying may vary considerably.

The battalions retained in closed formations are placed in echelon

in rear of one or both flanks. The narrower the original front taken up, the further away from the flanks should the units in echelon be posted, for the purpose of commanding the whole extent of front required. The prolongation of the fighting front, is effected by means of fresh battalions. In the advance, the deployment is carried out on the leading and in retiring on the rear battalion. When the deployment takes place from column of march, the several battalions avail themselves of a suitable opportunity for closing up into column formation previous to deploying.

If the regiment is in assembly formation, the deployment may be carried out before advancing. In all cases the battalion on which the deployment is to be made must be named. When the deployment is made on the move, the battalions forming the rear lines halt so as to gain their proper distance and place.

The distances depend upon circumstances. The intervals between battalions in first line, depend upon the task imposed, the object to be attained, and the nature of the country. In the original deployment the intervals should be ordered. The deployments are carried out, in or out of step, by the shortest way.

The movements of the regiments when deployed, are directed by giving the several battalions points to march on. A new front can generally only be taken up, by the deployment of the units echeloned in rear, in the required direction. If necessary, the original first line forms up in echelon in rear of the new front.

A unit of direction should not be named; on the other hand, whenever expedient, troops should be ordered to keep up connection with the centre or a flank.

When on the move, the regiment is re-formed, as a rule, in the direction of march, otherwise on a given line, in the required formation, on a specified battalion, by the shortest way.

The deployment of the company column, rests with the battalions.

PART I.—F. *The Brigade.*

The fate of the battalion, has overtaken the brigade even to a greater degree. The preface states that "Brigade Drill embraces merely formations of Assembly" and "Brigade exercises, more particularly, are a preparation for the duties of higher commands." As a fighting unit it has been disestablished, and as a necessary consequence the space allotted to its drill and other instructions has shrunk down from 35 to 5½ pages. Nevertheless, the duties that are still left to it are of great importance, and can only be efficiently performed by an educated practical soldier.

The "General Remarks" state briefly that "The instructions for the regiment are applicable to the brigade. The cautionary commands of the Brigade Commander are passed on by the Regimental Commanders."

The brigade is formed up either in wings or lines. In wings the regiments formed in mass of battalions, are placed side by side. In

lines, the junior battalion is in front line when in the normal formation. But any other order is admissible.

When the several lines are composed of the same number of battalions, these cover each other, otherwise the battalions in second line are placed in rear of the intervals.

The distance between lines and the intervals, is the same as with the regiment.

The positions of single battalions and batteries attached to the brigade are specially indicated.

The movements of the brigade in assembly formations, are to be restricted to the simplest description, and correspond generally to those of the regiment.

The Deployment of a Brigade for Action.

The issue of instructions for the execution of independent tasks in action to the subordinate units of command (regiments and independent battalions) within its fighting front, forms the basis of the deployment of the brigade for action. The execution, however, depends upon circumstances.

If the Brigade Commander is able to indicate to the several regiments, simultaneously, points of direction situated close together, the circumstances are the most favourable and normal for the deployment.

If only one regiment has been originally deployed for action, the most suitable place for the deployment or assembly of the remaining units of command, is in echelon in rear of one or both flanks.

All the movements of the brigade should be regulated by giving points to the several units of command to march on. A brigade composed of two regiments only, may at once place one battalion in reserve.

Everything else is carried out in accordance with the instructions for the deployment of regiments for action.

The deployment of the battalion for action rests with the regiment.

So far we have dealt with the School. Now comes Part II, The Fight, three quarters of which, it must be remembered, deal, as has been already stated, with general principles.

The principles contained in this part, once branded by many, and still by some in the military world of Europe, as the fanciful notions of theorists, now bear the official endorsement of the most experienced, practical, and enlightened soldiers of the age.

To be fully appreciated, every word of Part II should be carefully read, marked, learnt, and inwardly digested. It is so concise as scarcely to admit of further condensation. Want of space, however, compels us to deal with it in a more or less summary fashion. Those who wish to study it fully, I would refer to the translation of it by Captain W. H. Sawyer, Royal Lancaster Regiment, Brigade-Major, 1st Infantry Brigade, Aldershot, and published by Messrs. Stanford of Cockspur Street. This translation I have most carefully compared

with the original, and I can bear my humble testimony to the closeness of the two. It is an excellent shillingsworth.

These instructions for guidance in training and in battle, qualify Officers and men for the intelligent and effective application in the field, of the lessons they have learnt in peace-time, by giving them sound principles to work on.

We must turn to para. 125 to ascertain the real scope of this part of the Regulations: "The more advanced practices with mixed units and even tactical exercises in which the presence of the various arms is supposed, produce tactical situations and call forth decisions which are far beyond the scope of these Regulations. They in no way exhaust tactical instruction, but confine themselves to dealing with fundamental rules. The troops will, however, be able, even in action, to cope with any possible task, if they have, by practice, mastered the rules contained in these Regulations."

Formations only Normal.—Part II refers to the formations laid down in Part I, thus (§ 1): "The thorough mastery of the simple formations laid down in Part I forms the basis for a careful and uniform training of infantry. This training would, however, fail in its main object, were it not to go hand-in-hand with an intelligent application of these formations to the requirements of war." § 4. "The normal formations should be given up without hesitation whenever the varying circumstances require it." § 5. "The formation selected should be such as would be ordered in war to ensure the highest fire action, and which would be permitted for the purpose of reducing the effect of the enemy's fire. Whenever these two conditions are fulfilled the practice is in conformity with the requirements of war." § 121. "It should be borne in mind that the formations and principles laid down only deal with the simplest cases, and, owing to change of circumstances, will frequently experience modification when applied in the presence of the enemy," and "adherence to certain formations should never be allowed to divert attention from essentials."

These few extracts show us clearly what careful precautions have been taken to prevent the action of the "executive" from being in any way hampered by the misdirected efforts of mischievous formalism.

Spheres of Action of Commanders.—The chance of a breakdown of the military machine in the strain of war and stress of battle, has been reduced to a minimum by a judicious subdivision of labour and responsibility amongst all ranks. The exact duties and spheres of action of each leader have been carefully defined. The subordinates are thus left alone to do their own work in the fighting line, whilst the higher commanders, relieved from minor details, are able to turn their minds to the larger problems of strategy, &c., a wrong solution of which cannot be compensated for by any amount of hard fighting. The following concluding paragraphs to the Brigade, Regimental, and Battalion Instructions in Part I are significant and of very considerable importance.

§ 229 { "The deployment of the battalions for action rests
F. Brigade. { in the hands of the regiment."

§ 225 { "The deployment of the company columns for action
E. Regiment. { rests with the battalion."

§ 219 { "The direction of the fight in the fighting line rests
D. Battalion. { with the companies."

They are very fully borne out by the following paragraphs of Part II:—

Commencing with the lowest ranks, we find the possibility of the private soldier having (§ 61) to assume the leadership of his comrades in action, after all his superiors are incapacitated, taken into consideration, and provided for by the special training he now receives. § 21. "It is the Officer's duty to develop the judgment and self-reliance of the soldier;" and, "He should ever be ready to take rapid, well-considered, independent action."

The Group Leader.—§ 56. "He assists the zug leader, and is responsible within his own sphere for the placing of the men, for the adjustment of the sights, the proper handling of the rifle, the consumption of ammunition, and the replenishing of the magazine."

The Zug Leader.—§ 55. "He should take up such a position as will enable him to superintend the fire action of his men. He arranges the disposition of his zug in the space allotted to it, and decides on which objects the fire is to be directed, either in accordance with his instructions or on his own responsibility. He follows closely, the measures taken by the enemy and endeavours, according to his ability, to co-operate with the adjoining züge in the fighting line. He endeavours to ascertain, previous to a further advance, how the fighting line, or portions of it, could be brought up closer to the enemy; whether or in what manner a turning movement could be initiated; or whether advantage could be taken of any exposed point in the enemy's line. The zug leader in the fighting line will be best able to observe any opportunity of seizing an advantageous position, or of gaining an advantage over the enemy. He should then make up his mind how far he should, on his own responsibility, turn such advantage to account."

The Company Leader.—§ 95. "He should retain control of his company during the fight. He conveys his intentions to the zug leaders in the form of concise and clear orders, and takes up such a position as will enable him to direct his company. He arranges for the supply and distribution of the ammunition brought up from the rear, with all the means at his disposal on the battle-field."

The Battalion Commander.—§ 96. "The method adopted by the Commander in working his battalion in action, is to assign tasks to the several companies. Direct interference with the züge of individual companies is only permitted when evident misunderstandings or mistakes threaten to divert the course of the action into improper directions. It is the duty of the Battalion Commander, at the commencement of the fight, to impart his orders briefly, clearly, and with precision to each one of the company leaders—if possible in the presence of them all—leaving the manner of execution to them. He should be guided by this principle throughout the course of the action. His endeavour should be to maintain the co-operation of the

several companies with one another during the fight." § 101. "It is with regard to the troops placed in rear of the fighting line, either in echelon or in rear of the centre, that the Battalion Commander selects his own position, which is only quite exceptionally in the foremost line, nearly always with the troops in rear, but in any case in some place whence he can exercise supervision over his battalion in action. He will frequently only be able to affect the fire action of the companies, by directing the fresh supplies of ammunition to those points in the fighting line, where it may be most needed."

The Regimental Commander.—§ 103. "He appoints separate tasks to the several battalions, leaving them perfect freedom as to the manner of execution. Interference with the conduct of individual companies should be restricted to rare exceptional cases, and is only justifiable when the action of subordinate bodies threatens seriously to interfere with the execution of the Commander's general intentions, and there is no time to issue the necessary orders through the proper channel." § 109. "For the due execution of the tasks imposed upon him, the Regimental Commander should take up a properly selected position. At the commencement this will be in front. His presence is principally required there in the case of an encounter between troops in motion. During the fight, he can generally direct his troops to the best advantage from the vicinity of the troops echeloned in rear, that is, whence he can exercise the best supervision over the employment of his regiment. Should his regiment be fighting in brigade, he should select such a position as will enable him to keep up communication with the Brigade Commander."

The Brigade Commander.—§ 112. "The rule should be adhered to under all circumstances, that each regiment is to be allotted its own separate task, and that the Brigade Commander should confine himself to delivering his orders to regiments only." § 114. "The selection of the Brigade Commander's position is of great importance and should be changed as rarely as possible. The commencement of an action should find him at the head of the brigade; for neither reports, nor information, nor maps can take the place of a personal inspection of the enemy's position, that of the neighbouring troops, or of the ground. In that position he is best able effectually to direct the initial deployment, on which the course of the action so greatly depends.

"It likewise enables him to seize advantages over the enemy, by arriving at timely decisions, to ensure his troops taking the shortest routes, to direct their action into proper channels, and finally to prevent any irregular action on the part of the Commander of the advanced troops. During the action, however, the Commander remains sufficiently in rear to enable him to exercise supervision over the several parts of his brigade. This will generally be in the vicinity of the troops he has retained at his disposal. It is only from there that he can still control the course of the fight. He delivers his orders, as a rule, to his immediate subordinates. Should circumstances compel him to deviate from this rule and to give in-

dividual battalions direct orders for the execution of urgent measures, he should at once inform the Regimental Commander of the fact with whom he should maintain uninterrupted communication."

The next two extracts are applicable to all Commanders alike, § 124. "The larger the scale of the fight, the greater the scope for individual action. The attention of Commanders should be devoted more to carrying out their special task as a whole, than to the supervision of details. . . . But the scope allowed subordinate leaders should never be permitted to interfere with the plans of the Commander, and under all circumstances the maintenance of tactical order and the internal cohesion of the troops should be insisted upon." § 54. "The exercise of independence within these limits is the foundation of great results in war."

Fire Action.—At page 148 of the old Regulations we find the old Regulation view of the value of fire action. "The possibility of concentrating fire action on particular points for a short time invests it with an offensive character. It *may* under certain circumstances be absolutely annihilating, and may consequently of itself produce a decisive result, in any case an attack following immediately after would thereby be greatly facilitated." How different is the position accorded to fire action in the new Regulations! Part II, § 13. "The infantry fight *will as a rule* be decided by fire action." § 30. "The action of infantry consists *primarily* of the fire of the extended fighting line. It is able, *solely* by its fire, not only to repel the enemy and prepare the attack, but also under certain circumstances to decide the issue."

The Germans now classify all formations under two heads: 1st, the fighting (or extended) formation, the only one possible under modern fire; and 2nd, close formation, the only way of concentrating large masses preparatory to assuming this fighting formation. Linear tactics are completely excluded, as having no place in modern tactics. They are impossible in the first and useless in the second formation. Battalion, regimental, and brigade formations all come under the second head. The company is the only unit with a *close* as well as an *extended* formation. As to the proper rôle of close formation on the modern European battle-field, the *old Regulations* say, page 147: "The bodies in close formation should lay the greatest value on the retention of the troops in rank and file, the interior cohesion, the firing in mass and on the bayonet charge." *New Regulations*, § 13. "The delivery of fire by bodies in close order is the exception." § 18. "Fighting in extended formation and the correct application of its various movements, passing from extended to close order and *vice versa*, require therefore to be practised more thoroughly than the application of close formations, in which the infantry fight was formerly conducted, extended order then taking merely a secondary part." § 19. "The extended formation is the one now principally employed in action. The fight is commenced and in most cases carried through to the end in extended order. The extended line becomes, therefore, the principal fighting formation of infantry." § 20. "Close formation nevertheless still retains its full use in the

case of troops held in readiness for action and for reserves and supports to the fighting line."

The Three Arms.—The new Regulations speak with no uncertain sound as to the action of infantry against the three arms.

The proper application of fire action, in all and every case, is the burden of its teaching.

Infantry.—§ 47. "In the case of infantry *v.* infantry, the result depends, apart from moral factors, on the musketry training, fire discipline, and the direction of the firing. The Commander's task is to bring as many rifles as possible into action, or to gain the upper hand by concentrating the fire effect of extended lines on decisive points."

Cavalry.—§ 48. "The individual infantry soldier should realize the fact that he is more than a match for a cavalry soldier even on open and level ground, if on encountering him he is in immediate readiness to open fire. He need not even hesitate to engage several at a time, if he retains his calmness and presence of mind and uses his rifle correctly as a repeater without taking his eye off his opponent. Infantry should remain convinced that it has nothing to fear from cavalry, even in superior numbers, if it retains its coolness and firmness. Every formation is suitable for repelling cavalry, which admits of its being opposed by the well-aimed fire of masses at the halt. The most effectual manner of receiving cavalry is to bring the greatest available number of rifles to bear upon it. Only those formations (*i.e.*, changes of front) which favour this need be executed against cavalry."

Artillery.—§ 51. "In engaging artillery, it should be remembered that to this arm belongs superiority of fire at long and medium ranges. It is only at 1,000 mètres (1,094 yards) that the relative conditions become equalized, and at the shortest ranges the infantry gains the superiority. Infantry should endeavour to get as close as possible to artillery, by availing itself of the formation of the ground. Infantry fire should first be directed on any teams that may be visible and then on the gunners." Long-range fire is discountenanced as a rule.

Intrenching Tools.—§ 52. "Artificial cover prepared at the right time and place renders the troops and their leaders services, which are important and at times indispensable. It should, however, be subservient to the leader's plans, and should in no way govern them."

"The premature strengthening of ground is positively detrimental and restricts freedom of movement. Tactical training is required on the part of Commanders, in order to know when and where, as well as how to intrench."

Extent of Fighting Front.—With regard to the extent of "fighting front" taken up by infantry on a peace footing, it is interesting to notice how the Germans have solved the point in their own practical manner. § 25. "Even during tactical manœuvres, a normal front of 100 mètres (the approximate fighting front of a war-strength company) should be allowed for a company in extended order. This extension, as compared with the strength of a company, is greater

than that adopted in war. This, however, is equalized by the fact that the fighting line is not thinned by casualties as in war."

So much, then, for Part II. Little need be said of the last, the third, Part—Parades, &c.—in which are, however, many points of interest, showing, as they do, how complete is the reform throughout. It will suffice to say, that complicated show movements and formations for the edification of spectators, requiring much time and trouble in getting up, exist no more. 12½ pages contain all the necessary instruction for the smart and soldierlike performance of all parade duties.

Bugle Calls.—The bugle calls have likewise been most carefully revised. They numbered twenty-nine. Of these, thirteen have been abolished, and five others have been introduced. These are shown in Appendices 2 and 3.

Those abolished include all those, by means of which the Battalion Commander was wont to handle the skirmishing line, which duty has now been removed from his hands to those of the company leader.

During exercises, the Commander may use calls to break off the fight, to continue the fight, or to assemble the Commanders or their Aides-de-Camp.

In action, the only bugle calls allowed are—

Rapidly forward,
Fix bayonets,
Attention.

Of the drum and fife calls, three have been abolished and one introduced, leaving a total of twelve.

Common sense, combined with a sound military training, will find a free hand left it in every part of these Regulations. There are, however, four things, and only four, distinctly prohibited.

Part I, § 104.—Leaders are forbidden to use preconcerted signals with the whistle.

Part I, § 219.—The laying down of fixed formations for the deployment for action, to meet special cases, is forbidden.

Part II, § 82.—Any further systematizing of the procedure of attack is prohibited.

Part II, § 120.—Practising particular representations of the fight is prohibited.

These prohibitory clauses are doubtless inserted with a view to guarding against the stiffening effect of time, and effectually to prevent the letter from ever gaining the ascendancy over the spirit, in the application of these Regulations.

And now in conclusion let me give you *literatim* and *verbatim* the last "note" of the friend to whom you are—as I am sure you must feel yourselves to be—under a great obligation for the information he has enabled me to put before you. That "note" runs as follows, and how far you concur in the sentiments it so eloquently and concisely expresses, the discussion which I hope will now take place, will show.

"A careful consideration of the German Drill Regulations, 1888, cannot fail to convince us that the Germans have indeed cleared their deck for action and thrown all useless lumber overboard! Nothing has been retained but what will be of use in, and stand the test of war. All the cherished, truly national and traditional rigid linear tactics and spirit, inherited from their great King Frederick, for ever relegated to History! Simplicity and uniformity introduced into their drill and training, all non-essentials eliminated, enabling increased time and attention to be devoted to essentials, and thereby facilitating and expediting the re-incorporation of the Reserves in time of need; constant and immediate readiness for war at all periods of the training. Such are the principal advantages secured.

"Great as has been this wave of military reform, we may rest assured that now letter and form have been effectually subjugated by the spirit, wave after wave will succeed it in proper time, continually readjusting the military fighting machine and fitting it for the performance of its ever-changing work."

If this be correct, as I personally believe it to be, the lesson before us English soldiers is, in all departments and branches of our profession, to "go and do likewise."

APPENDICES.

- No. 1. Comparative Table of Contents of Drill Regulations, 1876 and 1888.
 No. 2. Obsolete Movements, &c.
 No. 3. New Formations, &c.
 No. 4. The Company.
 Normal Formations.
 List of Zug and Company Movements.
 No. 5. The Battalion.
 Normal Formations.
 List of Battalion Movements.
 No. 6. Organization. War and Peace Establishment.

APPENDIX I.

German Infantry Drill Regulations, 1876.

Total 226 pages.

Chapter.	Pages.
Part I. Individual Instruction.	
1. Instruction without the rifle.	35
2. Instruction with the rifle.	
3. Motions with the rifle for N.C.O's, Carrying the colours and the sword, and salutes with the same for Officers.	
4. The squad.	37
5. Formation, telling off, and dressing of a company.	
6. Motions with the rifle and company firing.	
7. Movements of a company.	
8. The company column and fighting in extended formation.	
9. Formations for special objects.	
Part II. Squad and Company.	

APPENDIX I.

German Infantry Drill Regulations, 1888.

Total 169 pages.

	No. of pages.
Preface	3
Part I. The School.	
A. Individual Instruction.	31
Without the rifle.	
With the rifle.	
Fighting in extended order	22½
B. The Zug.	
Close formation	
Extended formation	13½
C. The Company.	
Close formation	
Extended formation	7
D. The Battalion	
E. The Regiment	
F. The Brigade	2

APPENDIX II.—*Obsolete.**a. Individual Instruction.*

1. "Schliessen." Closing to flank by side step as a practice. Incidentally mentioned § 11.
2. Manual exercise.
 - { Advance arms.
 - { Support " (rifle and colour).
 - { Shoulder " (rifle and colour).
 - { Slope from the advance.
 - { Advance from the slope.
 - { Inspecting arms.

Note.—Only the order, present and slope are retained.

3. All exercises "by numbers."

b. Company.

1. The "three-rank formation."
2. Subdivision of company into two züge.
3. Open and close columns.
4. Wheeling of extended fighting line.
5. Relieving of extended fighting line.

c. Battalion.

1. Battalion line and line movements.
2. Battalion columns at different distances.
3. Battalion fighting formations.
4. Attacks in column and line supported by skirmishers.
5. Battalion square.

d. Bugle Calls.

- | | |
|----------------------------|---------------------|
| 1. Advance and rear guard. | 8. Right wheel. |
| 2. Supports. | 9. Forward. |
| 3. Skirmish. | 10. Unfix bayonets. |
| 4. Cease fire. | 11. Rapid retire. |
| 5. Half right. | 12. Slow retire. |
| 6. Half left. | 13. Form column. |
| 7. Left wheel. | |

Drums and Fifes.

1. Rapid firing.
2. Cease firing.
3. Reveillé.

APPENDIX III.—*New.**Individual Instruction.*

1. "Strecken." { Salute by a sentry at the order. The rifle is grasped by the muzzle, and the arm extended to the right, the butt resting on the ground.

2. During the bayonet charge, the rifle is now held at the short trail instead of the trail.
3. The ordinary pace has been accelerated from 112 to 114 paces a minute.
At the double the pace is now given as 165—170 a minute, measuring 1 metre (39·3 in.).
4. In marching "out of step" (*ohne tritt*) the distance between ranks from back to breast is increased from 0·64 to 0·80 in. (25 to 31½ in.).

Company.

1. The two-rank formation.
2. The subdivision of the company into three züge.
3. The company wheel, always executed at the double and out of step.
4. All interior movements of the company executed out of step.
5. Normal column distances of seven paces.
6. The company leader is mounted, when the company forms part of a larger unit.
7. The handling of the company in the fighting line rests solely with the company leader.

Battalion.

Normal Formations. $\left\{ \begin{array}{l} 1. \text{ Double column.} \\ 2. \text{ Deep} \quad \text{,,} \\ 3. \text{ Broad} \quad \text{,,} \end{array} \right.$

Bugle Calls.

1. 4th Battalion.
2. Commander's call.
3. Aide-de-camps' call (orders).
4. Rouse.
5. Retreat.

Drums and Fifes.

1. Rouse.

APPENDIX IV.—*The Company.*

Normal Formations.

1. Company column $\left\{ \begin{array}{l} \text{seven paces from front rank} \\ \text{to front rank.} \end{array} \right.$
2. Line.

Movements.

a. Zug—

1. Marching in line $\left\{ \begin{array}{l} \text{advancing.} \\ \text{retiring.} \\ \text{diagonal march.} \end{array} \right.$
2. Wheeling in line.
3. From line into $\left\{ \begin{array}{l} \text{file column} \\ \text{section column} \end{array} \right\}$ and back.
4. Changing from one column into another.
5. Column changing direction.

b. Company—

1. Marching in line { advancing
retiring.
diagonal march.
wheeling (at the double and out of step).
2. From line into { file column
section column } and back.
company column
3. From company column into { file column
section column } and back.
4. Company column movements { advance and retire.
to a flank in { file
sections } and back.
change of direction.
wheel.
5. Company column, reducing its front by half-züge and back.
6. Square. (Movements in square.)
7. Bayonet charge.

APPENDIX V.—*The Battalion.**Normal Formations.*

Companies in battalion columns are invariably formed in company columns.

1. Double column .. { 1. For purposes of assembly and
2. For movements outside the sphere of the enemy's fire.
2. Deep column ... { 1. For purposes of assembly, when a narrow front is
required.
2. When a march is to be commenced from the place of
assembly.
3. Broad column .. { 1. For parade purposes.
2. Only to be used when broad front is required.
3. Not suitable for battalion change of front.
4. For reassembling after an action.

Movements.

1. Changes from one column into another—
From double column into { Deep column.
Broad column.
From deep column into { Double column.
Broad column.
From broad column into { Double column.
Deep column.
2. Movements in column:—
Changes of direction by { a. { wheeling
diagonal march } by word of
b. Indication of point to march on.
c. Wheeling up by sections.
d. Wheeling in { double column.
deep column.
broad column.

APPENDIX VI.

Strength of German Units (Combatants).

Unit.	Peace strength.				War strength.		
	Officers.	N.C.O.	Buglers and Drummers.	Privates.	Officers.	N.C.O.	Buglers and Drummers.
Company	4	27	4	110	5	44	4
Battalion	18	506			22	1,002	
Regiments { 3 Battalions	58	1,719			68	3,017	
Brigade.....	76	2,263			90	4,019	
	..	(Two or three regiments.)			138	6,037	
							202

Colonel Sir LUMLEY GRAHAM, Bart. : Mr. Chairman and gentlemen, I wish to make a few remarks on the very interesting lecture which my friend Colonel Lonsdale Hale has given us. I understand from what he said that the substance of it was communicated to him by a friend to whom we must be very much indebted for the trouble he has taken. I would first of all remark that I think there has been some slight exaggeration by the writer of that paper with regard to some of the minor details of change, which do not matter much, perhaps, but still they are of some importance. For instance, any one who had heard that lecture without knowing anything about the tactics of the German Army would suppose that it was a new thing to form the company into three züge, but that is not so. Ever since I have known anything about the German Army, which is more than twenty years, and I do not know how long before that, the company was originally formed up on parade three deep and in three züge, but as soon as it was prepared to drill or manœuvre, by a complicated arrangement the third rank was done away with, and the two züge, of which it was originally composed (what we should call half companies), were divided into three züge. I gather that the three-deep formation has been done away with altogether; if so, I congratulate the German Army on the change. It always seemed to me a most extraordinary thing that practical soldiers like the Germans should retain their three-deep formation even for parade, entailing as it did the change into the two-deep formation before the company began to manœuvre. I am glad that they have done away with this complication, and I think we may reflect with some pleasure upon the fact that we in England who are not, as a rule, looked upon as leading the way in military matters should, at any rate, have been far before the Germans and others in this instance. A very long time ago, at the beginning of this century, we adopted the two-deep formation as a normal formation, and no doubt that led to the great development of fire which we used with such effect in the wars of that period, and which gave us great superiority over our enemies. There is another little detail which the writer of the article refers to in a manner which would lead me to suppose it was something new, but it is no novelty. I refer to the "marching without step," what we should call "marching at ease," which has always been practised in our Army and in that of Germany ever since I can remember, not, however, to the same extent by us as by the Germans. They call it marching without step. We used to, and I believe still, expect the men to keep step even when marching at ease; and indeed they generally do so of their own accord, because they find it pleasanter to keep step than not, but we allow all the other relaxations permitted by the Germans when marching without step; these are, however, trifles. The great point brought out by the lecturer is the spirit which inspires the changes now made in the field exercises of the German Army. The inspiration, by-the-by, does not come from above, it comes from below, dating from the year 1866. During the war of that year, although the leaders of the Army adhered to a great many of the old rules, to which they were wedded, and were averse to changes, there were, nevertheless, enlightened spirits in the Prussian Army who saw that many of those rules were obsolete, and ever since 1866, down to the year 1889; there has been a constant conflict between the Reforming and Conservative parties in the Army, the former, as a rule, comprising the younger Officers, the latter, those of a higher degree. A great many of those changes which are now officially adopted in the Regulations of the German Army had been practically in use before. There is no doubt that the battle before Metz taught a great lesson, and proved the necessity of great tactical changes which had hitherto been resisted by the chiefs of the Prussian Army. The principles which thus recommended themselves were to a certain extent recognized by authority, and were carried out by the more enlightened Officers during the remainder of the war. From that time onwards there has been constant fretting on the part of the military reformers to work those changes, which have at last made their way, and which are now recognized and authorized by the present Regulations. But I do not think there is a single point mentioned by the lecturer amongst the more important changes in German tactics which had not been strongly advocated for years by one or other of their military writers. I think we may apply this lesson to ourselves. We have not had the same advantages as the German Army in having to fight against civilized troops, so that we have not

learned by experience how necessary many of the reforms were sometimes; and, moreover, what fighting our Army has had, and perhaps is likely to have for some time to come, has been against an enemy to whom the scientific methods of modern warfare are not always applicable. This is bad for us in some ways; it leads us rather to neglect the modern scientific mode of fighting and to adhere to our old forms, which under certain circumstances, against the sort of enemy that we encounter, are more advisable. Therefore I think it is most important that the attention of our soldiers should be frequently called to what is really the scientific mode of fighting, and the mode that we should have to practise if we ever engage against a European enemy. I think on that account the way in which Colonel Hale has summarized the authorized changes in the German Army is of very great importance, and I hope that those in command, the higher authorities of the Army in this country, will take notice of what has been done abroad by a nation which has had the best possible opportunity of judging of what is really useful in war, and that we shall not lag behind. At the same time, Officers who command our troops in action against Zulus or Soudanese, or any similar antagonists, will, doubtless, have the intelligence to modify the process which they should use against a civilized enemy to what is required for engaging savages.

Colonel LONSDALE HALE: There is a junior Officer present whom I may venture to call on, Lieutenant Ellison, of the Staff College, who has spent most of his vacation lately in Germany. I dare say he would be able to give us some practical information as to the working of these Regulations, and how they are accepted in the German Army.

Lieutenant G. F. ELLISON: General Erskine and gentlemen, the only thing which induces me to take a part in this discussion is the fact that since the introduction of the new Drill Regulations into the German Army, I have had opportunities during a recent visit to Germany of hearing German Officers discuss them, and also of seeing something of the training of the recruits under the new system. I may first of all state that the opinions which I have heard expressed by German regimental Officers have been entirely favourable to the new Regulations: they like them, and they say so. They thoroughly realize that the increased demands on the intelligence of the individual soldiers have by no means lightened their task in training them. Every company commander realizes too that increased responsibility is thrown on his shoulders, not only in having to train his men up to a higher standard of individual excellence, but also in the fight itself, as the company, as stated by the lecturer, has now practically taken the place of the battalion as a tactical unit. The German regimental Officer is accustomed to and welcomes responsibility. It has been remarked in England that the present Regulations with their broad general principles make great demands on the personal intelligence of the regimental Officers, but I think that any one who knows German Officers will feel convinced that they will fully justify such demands being made on them. Indeed, under a system where it is an absolute certainty that, unless they can satisfy such demands their services will be dispensed with, it cannot be otherwise. And I think it is just that responsibility which really was the main cause of the change, for, as Sir Lumley Graham said, these changes have been brought about by the lower ranks. The regimental Officers have a responsibility and they feel it, and it is they, to a great extent, who have called for the simplification of the drill. They are the men who really feel the evils of the old order of things, and having the responsibility, they were ready to say what they thought. It certainly is, to a great extent, the lower ranks of regimental Officers who called for, and have now got, these changes in the drill, because it is on them the responsibility falls. With regard to the training of the men, I should like to say a few words. The works on which the German company commander has to base the training of his recruits are: (1) Drill Regulations; (2) the Musketry Regulations; and (3) the Gymnastic Regulations. The German recruits join in November, and by the following March they have to be what we should call "trained soldiers," as far as these subjects, namely, Drill, Musketry, and Gymnastics, are concerned. Added to this is also the fact that under the new Regulations each recruit must be thoroughly grounded in the theory and practice of the soldier's duty in modern warfare, that is to say, in fighting in extended order. To attain so much in so short a time, a proper distri-

bution of time and daily tasks is one of the foremost problems for those on whom the responsibility falls, namely, the company commanders. That some Officers do find a difficulty in doing this is evidenced by the fact that there have appeared in Germany various short works published by Officers who have worked out a system for themselves; these works being for the use of their comrades who find a difficulty in bringing their men up to the given standard in the given time. To show what the aim of such books is, let me quote the words of one of these writers, Captain von Busse, a German Officer.¹ He says: "The task of those to whom the training is entrusted increases in proportion as more is expected of the individual soldier. They have to work on a material differing in its quality to no considerable extent from that of former days, when what was expected of it was substantially less." In speaking of the increased demands now made on the intelligence of the soldier, he is referring to what the Germans call the independent use of the rifle by the soldier in the fight, a term which one constantly sees in German books. He says that he has been induced to publish this work as "it cannot be otherwise than advantageous for the training staff to have at its disposal a definite plan on which the young Officer and non-commissioned officer can confidently continue to work without having to make experiments for themselves, experiments which are doubtful and not always accompanied by success." In conclusion, I would only point out what in the German system above all strikes an English regimental Officer. Those points are: (1.) The absolute and unqualified responsibility of the company commander for the training and discipline of his men and also in the fight. (2.) The marvellous intelligence brought out by theoretical instruction in the non-commissioned officers and men. (3.) The individual training, the *Einzelausbildung*, of the recruit. In all these works on the training of the men, that is the term which one so constantly sees employed. In musketry drill, and everything else, the recruit is first of all trained individually and singly. And (4) the complete concentration of the training, that is under the new Regulations, on the objects of the fight, on that end for which the soldier exists, namely war.

General Sir ARTHUR HERBERT: Generally I approve of the system which has been so carefully explained by the lecturer, but before we follow the plan adopted by the Germans, the organization of our battalions must be changed. If the companies are to become quasi-independent units, the number of companies in the battalion must be reduced. This has for years past been advocated by many Officers, but the change has been seriously objected to by many others. If the company is to become a tactical unit, and if the Captains are to have the great individual responsibility given by the German Regulations, the strength of each company must be considerably increased. The Battalion Commander could not equally well give the necessary instructions relative to the mode in which the attack was to be conducted to eight company leaders as to four. If he did, greater confusion would result, as there would naturally be a greater difference of opinion as to the manner in which the instructions should be carried out by the Captains if there were eight than if there were four leaders in each battalion. Therefore, so long as the present organization continues it would be very undesirable to go as far as the Germans have in delegating authority to company leaders. Let anyone carefully read our new drill book, and he will find that a great quantity of the so-called top hamper has been thrown overboard, and that a long step has been taken in the right direction. For the present it appears to me we have gone far enough, and I hope we may move on gently. The Germans advanced very slowly in their reforms; twenty years have elapsed since the agitation for changes in the drill commenced, and they have only recently been officially approved of. I entirely agree that it is impossible to lay down any regulations which could be carried out in action and which would prevent companies and even battalions becoming mixed together when attacking in extended order. What is required is to accustom both Officers and men to work when mixed with other companies, and when an opportunity occurs to rally and re-form on their own Officers. This I and other Officers have endeavoured to do. When I commanded the camps of instruction at the Curragh, I made a point of mixing up the companies and even battalions in attack formations; both Officers and

¹ See *ante*, p. 572.

men soon became accustomed to move and manœuvre even when intermingled with other companies, and when opportunities occurred to rally on their Officers and get into order. It will therefore be seen that we also have tried many manœuvres before they have been officially adopted. It appears to me a mistake in the German drill, even in company formations, to adhere to the *touch*—on rough ground the touch cannot be maintained, and as battles are not fought on parade-grounds, what cannot be carried out on service should not be practised in time of peace. So long, therefore, as our battalion remains the tactical unit it would not in my opinion be desirable to delegate to company Commanders the powers and responsibility confided to them by the German Regulations.

General Sir LINTON SIMMONS, G.C.B. : There is very little I can say in addition to what has been said. The lecture is one of extreme interest and one which must be beneficial in inducing Officers to study the system in vogue in Germany. I quite agree with Sir Arthur Herbert in what he has said as to the present constitution of the battalion ; years ago in this theatre a lecture was read at which I think I presided, or at any rate was present, in which the question was discussed as to the formation of the battalion, and I felt convinced at that time as I do now that the best constitution of a battalion for manœuvring in the field is one in which it would be divided into four companies. It has many advantages in other respects. I believe if properly carried into effect it would simplify the system of promotion, as I stated before Lord Penzance's Commission, by establishing a better proportion between the number of Majors and Officers of inferior rank. It has this great advantage in the field, that when the lines of skirmishers are extended, their support depends upon the Officers commanding the companies, the men of which are in the most advanced line, and thus men who are accustomed to work together and belong to the same company, get mixed up in the first instance in the fighting line, not as strangers ; I believe it would be of very great advantage that the supports should be formed from the company which furnishes the fighting line. I do not know that I have any further observations to make except that having been at the German manœuvres five or six years ago I was very much struck by the facilities afforded by their system of command, by which the details of attack are left to subordinates for changing the direction of the movements of very large bodies of troops, and transferring them from one part of the field to another, thus illustrating the advantages of their organization for the transmission of orders, an important but by no means easy object to attain when in action.

Colonel LONSDALE HALE : First of all with regard to the question of large companies ; I remember about eight or ten years ago discussing the subject with a distinguished Officer, who asked me not to go in for four companies, because he said if once you take four companies you will have the British taxpayer reducing your Captains by one half, and it is important that we should keep as many Officers as possible. It is perfectly certain that if you publish to the world that you will only have four companies, the next radical movement in the House of Commons will lead to a reduction of Officers. I greatly agree in what Sir Arthur Herbert has said, but I have never advocated it because I believe the loss of Officers would be a very serious thing. With regard to the lecture which I have been proxy for to-day, while most cordially agreeing with it, I think I ought to remind you the system which it describes is purely an ideal and untried system. It is not like the system which many of us described after the war of 1870, which had been proved by the results. We have to wait for a campaign to see how this extreme individualism and excessive subdivision of command will work. We have never seen anything tried in war like the ideal, and may I say the somewhat Utopian system which has been put before us in this lecture. My friend who was unable to give this lecture is, I think, a great believer in general principles. He has, however, never taught, and I have taught all my life, and I can only say this, it is easy enough to make men get hold of a certain amount of rule of thumb and to apply it, but give me a man who can grasp principles, especially young men between twenty and thirty, and can apply them properly, and you give me a man of more than ordinary ability. There is nothing so difficult as for young fellows to learn to apply principles to practice. From great experience in examinations I may say that if I want to stop Captains' promotion or Lieutenants' promotion, I merely have to give applied questions on

general principles only, and few will answer. If I combine the two, everybody answers the rule of thumb question, and only the best men, and they are few, answer the applied general principles. In order to apply general principles you must have a great amount of practice. In the German Army they are always practising and therefore they can be constantly trying to apply these principles to practice and be corrected by their older soldiers. In an army like our own which has no opportunity of practising in the field, to throw anything like this at their heads and say, "Here are principles for you, you must go to principles," I am afraid would lead to disaster. We must not give up altogether rule of thumb as well as the inculcation of general principles. It is usual to give a vote of thanks to the lecturer, but I have General Erskine's permission to alter the custom on the present occasion. I will therefore ask if I may be allowed to convey the thanks of this meeting to my friend who has furnished the material for this lecture.

The CHAIRMAN: Gentlemen, Colonel Hale in the first part of the paper to which you have been listening stated that it was the intention of the Council of this Institution to have a paper included in the programme relative to the recent changes which had been authorized in the Drill Regulations of the German Army, but some unfortunate difficulties occurred, and Colonel Hale very kindly undertook to get us out of them, and the present paper is the result of what he undertook to do. You will observe that in the paper he describes himself as simply the mechanism of the telephone. Well, I think he must find himself in a very novel position if that is the case, because any person more unlike a piece of mechanism in this world I cannot imagine than Colonel Hale. As far as my observation goes whenever he appears in this theatre he gives us the result of the working of the very fertile brain with which Nature has endowed him. I am quite sure it would be much more consonant to his feelings to come here and give us an original paper of his own than one of another person, and I hope before long that he will find an opportunity of doing that. With regard to the concluding parts of his lecture, wherein he points to the German Army as an example to ours, and calls upon us to follow their example, I have only this to say, that it seems very good advice. I should strongly advocate it myself, but at the same time we should not proceed to act upon it without great circumspection, for we must recollect that what may work very well in the German Army might not be at all suitable to ours. With this reservation I think his advice is very reasonable, and I think it must be a satisfaction to him, as I am sure it is to myself and to most of us, to find that our War Office has anticipated that advice in the manual of drill which they have recently put forward. Whether in the compilation of that manual the work of excision has been carried to the full extent that was required, I am not quite prepared to say. Personally, I should have liked to see a few more things eliminated from the old book, but at all events the new book is a great advance on what we have been accustomed to. I quite agree with Sir Lumley Graham that the reform which has taken place in the German Army has worked from the lower ranks up to the higher ones, and what holds good with them I am quite sure holds good in our own Army. I will not detain you further. We have already thanked the unknown gentleman who has helped Colonel Hale in this lecture, and we ought not to omit to thank Colonel Hale himself for coming here and giving us the benefit of it.

NOTE.—I think Sir L. Graham misunderstood my reference to the zug. The zug has assuredly existed for years, but its training as a unit appears in the exercise for the first time now. The marching "Ohne Tritt" is not that also of former days.—
L. A. H.

Friday, April 5, 1889.

COLONEL C. B. BRACKENBURY, R.A., Director, Artillery College,
Woolwich, in the Chair.

RECENT INVENTIONS IN GUNPOWDER AND OTHER EXPLOSIVES.

By W. H. DEERING, F.C.S., F.I.C., Chief Assistant Chemist, War
Department.

THIS paper will be principally devoted to gunpowder, the part of my subject likely to have the greater interest for the members of this Institution. I must ask for your indulgence in respect of the deficiencies of the paper—deficiencies arising from pressure of time in putting the materials together, and also from necessary reticences concerning some of the subjects mentioned.

A natural classification of the changes which gunpowder has undergone would be:—Changes in chemical composition, changes in physical condition (in form, size, density), and changes both in chemical composition and physical condition; but there would be some inconvenience in adhering strictly to such a classification, and the limitations to which I have referred will necessarily make the review too imperfect to permit of such treatment.

I will mention first *Brown (or Cocoa) Powder*; although it is not a very recent invention it is desirable to consider it, as it gives continuity to this paper and the last read here on a similar subject: Colonel Brackenbury having mentioned it in his paper on "Gunpowder considered as the Spirit of Artillery," in February 1884, in the earlier days of its use.

It was introduced in 1882 in Germany, in the well-known form of a hexagonal prism with central cylindrical hole. Its composition (per 100 dry powder) of 79 per cent. potassium nitrate, 3 per cent. sulphur, and 18 per cent. of a very lightly-baked brown charcoal, is interesting on account of its wide deviation from the composition of the gunpowders then in use. The powders for military use in Europe were made with black charcoal, and generally were not very far removed from our own proportions of 75 per cent. nitre, 10 per cent. sulphur, 15 per cent. charcoal; the extremes of variation were shown by the French rifle-powder F₁, containing 77 per cent. nitre, 8 per cent. sulphur, 15 per cent. charcoal, and by the Dutch powder, stated to be composed of 70 per cent. nitre, 14 per cent. sulphur, 16 per cent. charcoal.

The use of very slightly carbonized straw for the brown charcoal, to be added to nitre and sulphur in the proportions already stated, was

patented by J. N. Heidemann (English patent, December 11, 1884. No. 16,314); and according to Major-General Wardell ("Handbook of Gunpowder and Gun-cotton") the brown charcoal used in Service Prism¹ Brown powder, is straw charcoal. Prism¹ Brown powder is used, as is well known, in the larger B.L. guns, and (for equal muzzle-velocity imparted to a projectile of the same weight) produces less pressure in the powder-chamber of the gun, and gives less smoke than the black gunpowder of the old composition.

Captain A. Noble and Sir Frederick Abel have estimated the quantity of heat, the volume of gases, and the chemical composition of the gases and of the saline residue of various typical gunpowders; and from their researches on "Fired Gunpowder" ("Proc. Roy. Soc.," 1880), and from the former's lecture on "Heat-Action of Explosives" ("Proc. Inst. Civ. Eng.," 1884), I have taken the following statement of composition of the saline residue and of the gases produced, under high pressure, on firing black pebble and brown prismatic powders in their steel explosion-vessel. The composition of gases and residue is of course not that prevailing at the period of highest temperature, but is that of the products after cooling down to atmospheric temperature. The water (pre-existing, or formed by the combustion of the charcoal) is not here included with the residues or gases.

The Powder.

<i>Black Pebble.</i>		<i>Brown Prismatic.</i>	
Nitre.....	74·76	Nitre.....	78·83
Sulphur....	10·07	Sulphur.....	2·04
Charcoal ...	14·22	Charcoal.....	17·80
		Water.....	1·33
			100·0
Water.....	0·95		
	100·0		

The Residue.

Potassium carbonate (K_2CO_3)..	65·48	Potassium carbonate	64·12
" sulphide (K_2S).....	14·66	" bicarbonate ($KHCO_3$)	13·55
Sulphur	9·49	" sulphide.....	none
Potassium sulphate (K_2SO_4)...	9·96	" sulphate.....	22·33
Other constituents.....	0·41		100·0
	100·0		

The Gases (by volume).

	Vols.		Vols.
Carbonic acid (CO_2)	47·48	Carbonic acid	51·30
" oxide (CO)	15·60	" oxide.....	3·42
Sulphuretted hydrogen (H_2S) ..	2·70		
Hydrogen	3·28	Hydrogen.....	3·26
Marsh-gas (CH_4).....	0·31	Marsh-gas.....	0·31
Nitrogen.....	30·63	Nitrogen.....	41·71
	100·0		100·0

Thus in the brown powder there is present more of the oxidizing nitre absolutely, and more relatively to the reducing charcoal and sulphur, than in the black powder. As a consequence, the residue of the brown powder is fully oxidized, and the gases contain only 7 volumes per cent. of unoxidized or imperfectly oxidized constituents (hydrogen, carbonic oxide, and marsh-gas); while the residue of the black powder contains some 24 per cent. of unoxidized constituents (potassium sulphide and sulphur, or rather potassium persulphide), and the gases 22 volumes per cent. I shall be able to show this difference of composition of the residues of the two powders by adding acetate of lead and acetic acid to some clear aqueous solution of the residues; in the case of the black powder black sulphide of lead is produced, in that of the brown powder white sulphate of lead.

The volume of permanent gases at the standard temperature and pressure (0° C. and 0.76 mètre), and the quantity of heat evolved on burning the black and brown powders, were found to be—

	Black pebble.	Brown prismatic.
On firing 1 kilogramme ¹ of dry powder—		
Volume of permanent gases produced (litres)...	278	198
Units of heat evolved (kilogramme-degrees Centigrade).....	721	837

The number given for volume of permanent gases multiplied by the “gravimetric density” of a powder-charge will give volumes of such gases per one volume of powder-charge. In addition, however, to the permanent gases given above, the hot gases from the fired gunpowder will contain water-vapour: in considerable quantity in the case of the black powder, and in large quantity in the case of the brown; the greater part of the water being that produced by the oxidation of the hydrogen of the charcoal, when the latter is burnt by the nitre. Besides this, there is the one or two per cent. of water pre-existing in the powder.

I have calculated the volume of water-vapour which would be present in the hot gunpowder gases (in the gases, for instance, while exerting pressure in the powder-chamber and bore of a gun), taking the powder as used, and allowing for the hydrogen, free and combined, in the permanent gases. At standard temperature and pressure there would be produced on firing 1 kilogramme of powder as used (*i.e.*, not quite dry):—

¹ For purposes of calculation it may be convenient to have these values stated in cubic inches and pound-degrees Fahrenheit per 1 lb. avd. of powder; they are—

	Black pebble.	Brown prismatic.
Volume of permanent gases in <i>cubic inches</i> (at same temperature and pressure as above)	7694	5480
Units of heat (pound-degrees Fahrenheit)	1298	1507

	Black pebble.	Brown prismatic.
Volume (litres) of permanent gases	275·7	195·4
" " water-vapour	40·9	122·5
Total	316·6	317·9

Possible dissociation of some of the water-vapour at the period of highest temperature has not been considered; altered relations of some of the constituents at high temperature, by chemical reaction between water-vapour and carbonic oxide on the one hand, or between hydrogen and carbonic acid on the other, would not affect the volume of the gases, except indirectly through temperature.

There is difficulty in calculating the *temperature*¹ from the *quantity of heat* evolved by the explosion of gunpowder, on account of uncertainty as to the value to be adopted for the specific heat of the gases at high temperatures; but taking the influence of the water into account leads to some reduction of the difference between the calculated temperatures given by black and brown powder, the latter giving the higher temperature.

The volume of total gases produced being approximately equal, and their *temperature* being somewhat higher in the case of the brown powder, the lower pressure produced in the powder-chamber of a gun by the brown prismatic powder as compared with black prismatic of the old composition (of course, under comparable conditions, same muzzle-velocity imparted to projectile of same weight), must be attributed to the slower rate of production of the gases, *i.e.*, to the slower rate of burning of the brown powder; and this mainly due to its chemical composition.

The Mining Powder experimented with by Captain A. Noble and Sir Frederick Abel is interesting as an example of the influence of a change of composition in the opposite direction to that of brown prismatic powder. The mining powder used contained less nitre, more sulphur and charcoal than ordinary black gunpowder. The percentage composition was:—Nitre, 61·92; sulphur, 15·06; charcoal, 21·41; water, 1·61. The charcoal was a black charcoal of very nearly the same composition as that of the charcoal of the pebble powder. The products of combustion, solid and gaseous, are (as was to be expected) still richer in unoxidized or imperfectly oxidized constituents than the pebble powder. The volume of permanent gases (at 0° C. and 0·76 mètre) was found to be 360 litres (the volume of water-vapour to be added would be intermediate between that given above for black pebble and brown prismatic powders), and the quantity of heat to be 517 units (kgm.-degrees Cent.) per 1 kilogramme of dry powder. That is, much more gas and much less heat than from the black pebble,

¹ Sir Frederick Abel and Capt. A. Noble estimate the actual temperature produced by the explosion of their black pebble powder at about 2100° C. (about 3800° F.), so that the volume of total gases (permanent gases and water) at this temperature (supposing that it were possible for work to be done without loss of heat by the gases in expanding) given by a charge of pebble powder of "gravimetric density" = 1, would be about $317 \times 8·7 = 2758$ volumes.

and *à fortiori* than from the brown powder. The estimated temperature given by the mining powder is also considerably lower than that of the others.

In speaking of the erosive action of fired gunpowder on the bore of guns, Captain Noble, in his previously-mentioned lecture, stated as the result of joint experiments by himself and Sir Frederick Abel on the erosive action of different gunpowders on steel tubes, that while erosion did not appear simply to depend on the temperature of the products of explosion, the gunpowder which caused least erosion was that which gave most gas and least heat.

In view of this statement, it would be interesting to know how a powder of the composition of this mining powder, in the form of prisms of the usual shape and size, would behave as a gunpowder: whether right ballistics and less erosion could be got with it.

Nitrate of Ammonium Gunpowder.—F. Gaens has proposed and patented (Eng. Pat. November 24th, 1885, No. 14,412) the use of a gunpowder differing from the old gunpowder still more radically in composition than brown powder does, and consisting of ordinary nitre, nitrate of ammonium, and charcoal. He calls it *Amide Powder*, and his theory is that when these components are employed in suitable proportions, potassamide, KH_2N (a compound of potassium, hydrogen, and nitrogen), is formed on ignition of the powder, that the potassamide is volatile at high temperatures and increases the useful effect of the explosive. He represents this by the chemical equation—

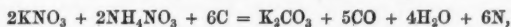


the two nitrates and the carbon of the charcoal giving the ordinary gunpowder gases: carbonic acid, carbonic oxide, water, nitrogen, and (so it is claimed) potassamide.

Mr. Gaens proposes the proportions 101 parts by weight of ordinary nitre, 80 parts nitrate of ammonium, and 40 parts charcoal; and he claims that such a gunpowder when burned leaves very little (if any) residue, produces no gases injurious to the gun, and much less smoke than ordinary gunpowder does.

The proposal is a very interesting one, and the advantages claimed are most important; but, as I have recently elsewhere pointed out ("Journal Soc. Arts," December 14th, 1888), there is no statement in chemical literature (so far as I have been able to ascertain) of the existence of a potassamide volatile as such.

Probably the main course of the chemical change would be—



the products being carbonate of potassium, carbonic oxide, water, nitrogen: familiar products of the explosion of ordinary gunpowder, the ammonia being oxidized into water and nitrogen; there would also be some inter-reaction between carbonic oxide and water-vapour at high temperature, with formation of some carbonic acid and hydrogen.

The volume of total gases produced by the ignition of such a powder would be very large, and its rate of burning would be likely to be

slow (from the absence of sulphur). Krupp's last Report, No. LXXIII, of October, 1888, contains an account of trials of new kinds of powder furnished by the United Rhenish-Westphalian Powder Factories. These were of two kinds, a large grain and a prismatic powder; their composition is not given, but from the properties attributed to them of giving but little residue, a thin smoke, and of being highly hygroscopic, it is very probable that they contain nitrate of ammonium, and are similar to Gaens's Amide Powder.

The grain powder, suited for use in guns of small calibre, was tried in guns of 4 to 8·7 centimètre calibre (1·58 inch to 3·42 inches), and found to give considerably less pressure in the powder-chamber for equal velocity than German Service grain and cubical powders tried in comparison: the new powder being stated to be about $1\frac{1}{4}$ to $1\frac{1}{3}$ times as efficient as the old.

The prismatic powder, suited for medium-sized guns, was proved in 10·5 and 15 centimètre guns (4·13 inch and 5·9 inch), with the result that the new powder was found to be more efficient per unit of weight than the older brown prismatic powder, giving less pressure for the same velocity; and it is stated that, without exceeding a safe limit of pressure, the new powder could give velocities which could not be reached by the brown prismatic powder.

The powder-pellet of the cartridge used in 1887 in the Swiss 7·5 millimètre Hebler rifle is stated to have had five-sixths of the potassium nitrate replaced by ammonium nitrate ("Mittheilungen über gegenstände des Artillerie und Geniewesens," 1888, p. 289). One would have thought that five-sixths potassium nitrate and one-sixth ammonium nitrate would have been more likely, but the statement is made as above.

E.X.E. Powder.—This, General Wardell informs us in his "Hand-book of Gunpowder, &c.," is a black (or rather slate-coloured) prismatic powder of usual prism¹ size, recently introduced for use in the 6-inch B.L. and in large R.M.L. guns. From particulars there mentioned, a charge of E.X.E. powder will impart the same muzzle-velocity to the 100-lb. projectile of a 6-inch B.L. gun as one of prism¹ brown powder weighing about one-seventh more; the E.X.E. giving about 1 ton per square inch more pressure in the powder-chamber of the gun than the brown powder.

S.B.C. powder, or slow-burning cocoa powder, is (we learn from the same source) a brown prismatic powder of prism¹ size for use in the largest B.L. guns, the $13\frac{1}{2}$ and $16\frac{1}{4}$ inch; and from details there given, this powder, proved in an 11-inch B.L. gun, gives (for a slightly greater muzzle-velocity to a projectile of same weight) about 2 tons per square inch less pressure in the powder-chamber than does the old "prism¹ brown" powder. To give the same muzzle-velocity, a charge of S.B.C. about one-fifth greater than that of the "prism¹ brown" appears to be required.

Perforated Cake Powder.—As is well known, the perforated hexagonal prismatic powder was the result of General Rodman's views on the theory of the burning of gunpowder, and of the previous trial (in 1860) of his cake powder. This consisted of cylindrical cakes of

compressed powder in which cylindrical holes were made by pins in the operation of pressing. A cylindrical charge, of the diameter of the bore of the gun, was made of these cakes, the latter being placed so that the holes in the different cakes corresponded. In 1871 charges of this kind were made in the United States for the 12-inch and 10-inch Rodman guns. The charge for the former gun weighed 75 lbs., and was composed of four cylindrical cakes $11\frac{1}{2}$ inches in diameter and 3 inches in height. They were pressed as whole cakes, and $\frac{1}{4}$ -inch cylindrical holes (with their centres at $\frac{3}{4}$ -inch distance) were subsequently bored in the cakes. The comparative trials made in the United States with the perforated cake powder and "mammoth pebble" are stated to have been (under the then existing conditions) favourable to the latter, and the perforated cake eventually took the form of perforated hexagonal prisms.

The object of the cylindrical perforation in both kinds of powder was, as is well known, the diminution of initial pressure in the gun: the burning of the powder taking place from the centre of the hole (or holes) radially outwards, the burning surface would be a progressively increasing one—that of a progressively widening cylinder, and as a consequence the volume of gas would be produced at an increasing rate while the projectile was moving towards the muzzle. Any burning of the prisms in a charge from the outside inwards (or rather, simultaneous burning of all the surfaces of a prism) would, however, work in the opposite direction as regards initial pressure.

In Mr. G. Quick's cake powder, and Colonel W. H. Noble's Sector Powder, there is a return towards the use of perforated cake. Mr. Quick has taken out several patents for improvements in cartridges for ordnance (1884, No. 15,546; 1887, No. 6,360; 1887, No. 17,506; 1888, No. 1,119; the first (1884) is for the pressing of discs or cakes of gunpowder (or other gas-producing explosive) with a larger central cylindrical hole and smaller radial ones, which are connected by numerous radial and concentric channels, either formed on the flat sides of the cakes by suitable means in the pressing, or subsequently cut or drilled in them. The object of these channels is stated to be for the spread of the flame equally and rapidly in all directions over and between the surfaces of the cakes as well as through the perforations in them, so that the whole cake and the whole of the charge may be ignited with great rapidity and burnt with great uniformity. (These objects, it may be noted, differ from those aimed at in the Rodman perforated cake.) The central hole should bear some relation to the proposed diameter and length of the cartridge; the discs may be of any required thickness, from half an inch to six or more inches, and any number may be employed to form a cartridge or charge, the central holes being kept in the centre of the cartridge, and the other holes corresponding to each other. The discs may be of the same diameter as the powder-chamber of the gun; or they may be smaller, and the annular space may be filled with any other description of powder. One of the specifications claims the use of solution of gun-cotton, or of celluloid, or similar material, as a cement or waterproof coating for the individual cakes forming a cart-

ridge; and the 1888 Specification, instead of discs, proposes the compressing of gunpowder or other explosive in the form of segments of a circle (they appear from the drawing to be sectors of a circle), so that when placed together they form rings or discs of a diameter suitable to the powder-chamber of the gun. The segments are provided with projections and recesses to lock the segments of the cakes and the individual cakes to one another, so as to prevent any twisting or sliding movement, the junctions of the segments being so disposed that the segments "break joint" with respect to one another; the whole thus forming a rigid cylindrical cartridge or charge.

Colonel W. H. Noble, in his Specification of December 17th, 1886, No. 16,595, proposes to build up cylindrical charges for guns by putting together a number of pieces of compressed gunpowder (or other explosive), each piece moulded in the form of a sector of a cylinder, with suitable perforations or grooves. The holes in the different layers of sectors are made to coincide so as to form longitudinal holes through the charge. A drawing shows the arrangement of the charge for different calibres, viz.: for 6-pr. quick-firing guns, three sectors, forming the circle of a layer, the sectors simply rounded at the corners, or having grooves along their meeting faces; for a 12-pr. B.L. gun, four quadrants, each with a hole through it, and with rounded corners; and for the 30-pr. B.L. gun, six sextants. This antedates the second of Mr. Quick's specifications just mentioned, in respect to the use of sector-shaped units of charge.

Colonel Noble also claims improvements in the preparation of charcoal for gunpowder, with a view to obtaining charcoal of uniform chemical composition. In charring wood, he proposes to previously crush it, to char some of it rapidly and some slowly so as to produce charcoals containing different percentages of carbon to be ascertained by analysis, and to make a blend of the charcoals in such proportion as to furnish a charcoal containing the desired amount of carbon. Also he proposes to employ uncharred turf or bog-stuff (previously washed, dried, and ground) either alone or mixed with charcoal.

Uncharred peat has, however, been previously used in partial substitution of charcoal in Oliver powder, a slow-burning mining powder of American make. A variety of it, tried by General Abbot previously to 1881, was composed of 75 per cent. nitre, 10 per cent. sulphur, 10 per cent. charcoal, and 5 per cent. uncarbonized peat. He found it to be quite unsuited for torpedoes, but thought that the powder might have valuable properties as a cannon powder, the introduction of peat and the peculiarities of manufacture having retarded combustion.

Smokeless Powders.—Within the last three or four years several preparations, which have been stated to give practically no smoke, have been proposed as substitutes for the old nitre, sulphur, charcoal gunpowders. They consist essentially of nitro-cotton, or other kind of nitro-cellulose, specially treated with the view of producing a slower burning substance, or of nitro-glycerine and nitro-cotton.

The presence of metallic nitrate (other than ammonium nitrate) as a constituent of such powders, would be incompatible with their

smokelessness; if, for example, ordinary nitre or barium nitrate were used, a smoke-cloud of potassium carbonate or of barium carbonate would be produced on firing the powder.

Schultze's powder, introduced some twenty-five years since, and used as a sporting powder, consists essentially of nitro-lignin (grains of wood carefully purified from resinous matter, &c., dried and converted into nitro-derivative by soaking in mixed strong nitric and sulphuric acids) with a considerable quantity of nitrates of potassium and barium. The well-known *E.C. Sporting and Rifle Powders* consist of nitro-cotton (much of which is less highly nitrated than Service gun-cotton) and a large quantity of nitrate (usually nitrates of potassium and barium), with a little resinous or waxy matter; the explosive being formed into small round grains. Both the Schultze and *E.C.* powders give, as you will see, when fired, a very appreciable amount of white smoke, consisting of carbonates of potassium and barium. They are interesting as being early nitro-cellulose powders.

By the use of a suitable preparation of nitro-cellulose (or similar chemical compound) a practically smokeless powder is attainable, giving, with less weight of charge than ordinary gunpowder, very high velocity to the bullet; and making the lightened cartridge of the small-bore rifle a little lighter.

Vieille's powder (or "*Poudre B*"), which is used for the French Lebel rifle (1886 pattern) of 8 mm. (0.315-inch) calibre, is stated to give to the bullet (weighing 15 grammes, or about 231 grains) a muzzle-velocity of 600 mètres per second (1,968 ft.-sec.), or according to another statement 620 mètres (2,034 ft.-sec.), and to produce little or no smoke.

Service gun-cotton consists mainly of trinitro-cellulose, $C_6H_7O_2(NO_3)_3$, and produces when fired a much greater volume of gases¹ and a much higher temperature than ordinary gunpowder (black or brown); properties which, combined with the great rapidity with which it burns in the fibrous condition, are the causes of the high initial pressures which it is capable of producing in a rifle or gun.

Several patents have been taken out for the production of a nitro-cellulose powder which shall burn at a moderated rate, and consequently cause less initial pressure in the weapon.

The preparation of the *Johnson-Borland powder* is based on the patent of D. Johnson (1885, 24th July, Specification No. 8,951); the patentee uses nitro-cellulose, obtained by the nitration of cotton or wood, and preferably dinitro-cellulose, and the essential feature of the invention is the hardening of the grains or blocks of nitro-cellulose by heating with camphor. An oxidizing agent—nitrate of potassium or of barium—is added to the dinitro-cellulose, and an addition of carbonaceous material may also be made; for example, the patentee proposes for military firearms a mixture of 50 per cent. by weight of

¹ I should mention that gun-cotton when fired gives (not taking into account the small amount of mineral matter) wholly gaseous products of combustion; when it is fired in a closed vessel, these are carbonic acid, carbonic oxide, gaseous water, hydrogen, and nitrogen. Inflamed under only atmospheric pressure, nitric oxide is also produced.

nitro-cellulose, 40 per cent. nitrate of potassium, and 10 per cent. of torrefied starch or of lamp-black. The nitro-cellulose or nitro-cellulose mixture is to be formed into grains, prisms, or other required form, then dried and saturated with a solution of camphor in a volatile solvent, such as will evaporate below 100°C . (212°F .). Light petroleum or benzoline is a suitable solvent, and good results are said to be given by employing 10 parts of the nitro-cellulose or mixture, 1 part of camphor and 5 parts of solvent. Half the weight of the camphor may be replaced by phenol (carbolic acid). The solvent is then distilled off by gentle heating and recovered; the camphor is left in the solid state, intimately mixed with the nitro-cellulose. The material is then heated in a closed vessel at a temperature not exceeding 100°C . (212°F .). At this temperature the camphor is stated to have a remarkable gelatinizing action on the nitro-cellulose, and to produce a hard material, the hardness of which can be regulated by varying the proportion of camphor used.

The camphor may then be sublimed off from the explosive at a gentle heat, or dissolved out from it by means of light petroleum, and the explosive dried. It is claimed that the prisms or grains of nitro-cellulose are, by this treatment, hardened throughout and not merely surface hardened, and that the required slowing of the rate of burning is thereby caused; while, on the other hand, there is no tendency to hang fire, the nitro-cellulose practically retaining its fibrous structure.

The action of camphor on the less highly nitrated cellulose to produce a mass plastic when warm, hard when cold, has long been known and utilized in the manufacture of celluloid.

Nitrate of potassium or barium, when present in the Johnson-Borland powder, as already mentioned, would be incompatible with smokelessness.

In the three following patented processes the nitro-cellulose is dissolved or gelatinized in a solvent, by which treatment the fibrous character of the material is destroyed and a horny product obtained, burning in the rifle or gun at a slower rate than in the fibrous condition.

F. Engel (Specification No. 6,022, April 25th, 1887) nitrates vegetable fibres, woody matter, or other form of cellulose in the usual way (*i.e.*, by steeping in mixed nitric and sulphuric acids), washes and dries the nitro-cellulose, and treats it with acetic ether or acetone or other like solvent. The action of the solvent is assisted by mechanical kneading in a suitable vessel until a viscid paste or gelatinous mass is obtained. To this mass a certain amount of oxidizing compound (such as potassium or barium nitrate, potassium chlorate, &c.), and a small proportion of a hydrocarbon such as naphthalene may be added. The mass is then formed into cake, or into any required shape, the solvent allowed to evaporate, or by suitable means distilled off, condensed, and recovered. The powder is left as a dense, horny substance, with a hard glassy fracture, and which can readily be granulated. The claims of higher velocity of projectile and less pressure, of very much less smoke and residue than with any ordinary gunpowder, are made for it; and a smaller charge than of the latter is said to be required. When the

above-mentioned oxidizing salts are employed, there must, however, be an appreciable amount of smoke from the powder.

F. C. Glaser's patent (1887, 13th December, No. 17,167) has the greatest possible similarity to Engel's; the same solvents are used and the same mode of procedure followed, Glaser, however, uses his cellulose in the state of paper or cardboard in sheets or strips, or other manufactured form, which are converted into nitro-cellulose in the usual way, then gelatinized by the action of a solvent. The gelatinized sheets are either dried separately or in layers, in the latter case the layers will adhere during the drying. As in Engel's specification, an oxidizing salt and a hydrocarbon may be added.

I should mention that the solubility of trinitro-cotton in acetic ether has been known for more than thirty years.

E. Turpin has also patented means for the production of an improved smokeless powder for firearms (1888, 20th March, No. 4,310). He prepares a paste by dissolving gun-cotton (more or less nitrated) in a suitable solvent. For the most highly nitrated gun-cotton, he proposes as solvents a solution of ammonia in ether, or a mixture of acetone and ether. He appears not to use acetic ether on account of its high price. He states that the trinitro-cotton ("insoluble gun-cotton") is in great measure soluble in a solution of the less highly nitrated cotton in ether, and gives proportions for forming by this means a gun-cotton paste. Sheet is to be formed from this paste by mechanical means indicated, and the sheet of paste is to be equalized in thickness by being warmed and passed between metal rollers; it is to be of three times the thickness it should finally have, to allow for shrinking on drying and for further rolling. The sheet of paste is then freed from solvent by drying it in the open air, or in apparatus which permits of the condensation and recovery of some of the solvent.

The sheets of gun-cotton, when nearly dry, are subjected to further pressure to reduce them to the required thickness, the pressing being assisted by softening the sheets with ether. The sheets are then cut up into strips, and then cut crosswise, to form small cubes or grains, which are sorted by sifting.

The smaller the grains, the more rapid will be the rate of burning, and the higher will be the initial pressure and the velocity of the projectile. The size of the grain should be proportional to that of the calibre of the gun, a powder of a grain of 1 cubic millimetre (0.00006 cubic inch) for a calibre of 10 millimètres (0.394 inch) being taken as the basis of computation. For artillery it is stated that the powder need not be granulated, but may be used in the form of strips of the same length as the chamber of the gun, and square in section, with side of square proportional to the calibre of the gun. The weight of charge of the new powder, according to the patentee, would generally be half that of ordinary black gunpowder, and would give a higher velocity.

If the powder should burn too quickly for some purposes, *e.g.*, for Congreve rockets, a small addition of camphor and of oxidizing salt is to be made to the powder.

The last powder of this class that I shall mention is that of Mr. A. Nobel, the eminent founder of the nitro-glycerine industry. It is a horny preparation, composed of nitro-glycerine, nitro-cotton, and camphor. It is a kind of blasting-gelatine, with the proportion of nitro-cotton greatly increased, and with the addition of camphor. The resulting product is described in the Specification (1888, 31st Jan., No. 1,471) as somewhat resembling celluloid in appearance, as being easily formed into grains or pellets of any shape, and as burning in firearms with the tempered velocity needed to render it a fit substitute for gunpowder, over which it is stated to have the advantages of greater power, of leaving almost no residue, and of being smokeless or almost smokeless. The permissible range of variation of the constituents is a wide one, but it is stated that when the proportion of nitro-glycerine exceeds two-thirds of the compound, it is rather too soft; and when the nitro-cellulose exceeds two-thirds, the product becomes too tough and hard to be easily granulated.

The camphor is stated to be added to assist the solution of the nitro-cellulose (usually the less highly nitrated nitro-cotton in the form of dry pulp), but it no doubt helps to make a slow-burning product; some other substances are mentioned as substitutes for the camphor. A suitable proportion of camphor is said to be 10 to 30 per cent. of the weight of the nitro-glycerine; more camphor being needed to assist the solvent action of the nitro-glycerine, the greater the proportion of nitro-cellulose employed.

In making those preparations in which the nitro-glycerine is predominant, the use of a volatile liquid in which the nitro-glycerine and camphor will dissolve is recommended. Benzol is mentioned as being very suitable. When the nitro-cellulose is the predominant constituent, the formation of a paste is facilitated by the use of a volatile solvent of nitro-cellulose, such as acetic ether or acetone.

Two examples of mixtures are given, representing about the extremes of variation of the constituents which may be employed with success:—

In 100 parts by weight of nitro-glycerine, 10 parts of camphor are to be dissolved and 200 parts of benzol added. In this mixture, 50 parts of dry soluble nitro-cotton pulp are to be steeped. The benzol is then evaporated and the material mixed by passing between rollers, which are hollow and heated by means of steam to 50° or 60° C. (122° or 140° F.). When uniform, it is rolled out into sheets and cut up into grains or moulded, and is then ready for use as a gunpowder.

Or, when it is required to reduce the amount of nitro-glycerine as far as practicable, 100 parts by weight of nitro-glycerine, 10 to 25 parts of camphor, and 200 to 400 parts of acetate of amyl are mixed, and 200 parts of dry soluble nitro-cotton pulp are steeped in the liquid. The mixture is to be kneaded and mixed until the nitro-cotton is dissolved, and the resulting paste is formed into thin sheet, from which the solvent is removed by heat, and the dry material cut up into grains, &c., as before.

With the view of shortening the operation of mixing (and thereby diminishing loss of solvent), it is proposed to substitute for the greater

part of the soluble nitro-cotton a more easily soluble nitro-cellulose, such as nitro-starch, nitro-dextrin, or nitro-lignin.

The mode of using the explosive differs, it is stated, from that of gunpowder only in so far that the charge for fire-arms must be proportioned to the relative power of the explosives.

For the preparation of a sporting powder, for which smokelessness is not essential, the addition of a moderate amount of oxidizing salt (such as potassium chlorate or nitrate) or of picrate is advantageous.

Here is some of the powder in grains, suitable for use as a rifle powder. It burns readily in the open air on applying flame, and produces almost no smoke.

It would have been desirable for me to have given some information as to the ballistics given by these powders in actual use, but I cannot do so, as some of them are being experimented with by the Explosives Committee, and are still under consideration.

The foreign military periodicals of last autumn stated that the Wetteren factory was making a "paper-powder," having great similarity to the French "Powder B," and intended for use in the Belgian small-calibre rifle; also that the German Government had contracted with the Rottweil-Düneberg and the Rhenish-Westphalian Powder Companies for the supply of a smokeless powder for their new small-arms ammunition.

On the other hand, a Spanish military periodical stated last December, that the powder for the Lebel rifle deteriorated rapidly, owing to the chemical decomposition of the nitro-cellulose which it contained, and that only the recently manufactured powder gave the remarkable ballistics attributed to it, there being a notable falling-off in the velocity given by the powder a few months after manufacture. It stated that, in consequence, the French had decided to give up the new powder and to revert to the use of a good type of black powder.

I will conclude this section of my subject by giving the substance of an article on "Smokeless Powder" in the French periodical, "L'Avenir Militaire," of 25th December, 1888. The writer states that it is well known that the cartridge of the 1886 pattern rifle is charged with a special powder, a powder which is certainly the most important factor in the superiority of the new weapon over the old one. The powder imparts a high muzzle-velocity to the bullet, with but little strain on the breech mechanism, and but little recoil, and produces only a very thin bluish smoke, invisible at a moderate distance, and causes a comparatively feeble report. Their field artillery will, he states, shortly be charged with the same powder, a considerably lighter charge of which will be required. The reduction in weight per round will be about 1 kilogramme (2·2 lbs.), so that an ammunition-wagon usually carrying 75 rounds would be able to take 8 or 9 more rounds, or have the advantage of greater lightness.

As regards the influence which the use of a smokeless powder would have on tactics, the writer remarks that the subject is at present conjectural, but some obvious consequences can be foreseen. In the case of artillery, the use of smokeless powder against an enemy simi-

larly provided would render precision of aim possible, and would allow the effect of the fire to be seen. A small drawback would be that it would be more difficult to execute the movement recommended for avoiding the effects of well-directed fire from the enemy, viz., advancing the guns by hand by about 50 mètres (55 yards), a movement favoured by the cover of smoke.

As regards infantry, he thinks that the question is more complex. The smoke-cloud with the old powder is less dense than in the case of artillery, and interferes less with the maintenance of effective fire. The smoke shut out the sight of death and suffering, and gave a sense of protection: a false sense, however, as the smoke really betrays the infantry's position. By these remarks the writer does not mean to find fault with the adoption of "Powder B;" on the contrary, he regards it as a necessary accompaniment of a reduction of calibre of the rifle, the old powder causing too much fouling. If the enemy were also provided with a smokeless powder, the balance of advantage would be equalized; both sides would have to modify existing tactical arrangements. Surprise would be a factor of the greatest importance in the use of artillery, and still more of infantry; the latter can find footing anywhere and remain unnoticed for a long time while keeping up fire, the smoke alone betraying their whereabouts. Hearing, it is stated, will not be able to take the place of sight in judging of the direction from which firing with smokeless powder proceeds, Colonel Sébert having recently shown that the apparent direction differs much from the true one, on account of the disturbing influence of the projectile on the sound-waves produced on firing.

I have left myself so little time for the consideration of other explosives than gunpowder, as to make the title of this paper virtually a misnomer. I venture to refer you to a recent paper of mine on explosives, which will be found in the "Journal of the Society of Arts" of December 14th, 1888, in which mention is made of some of the more important inventions which have been made in explosives of late years.

I have had to decide whether my concluding remarks should be on the subject of trials of gun-cotton shells in Germany and Italy, or on the arrangements of the Graydon shell, in which a small bursting-charge of dynamite has been fired successfully from an ordinary gun by means of gunpowder; or on the ingenious Zalinski shell and fuze, which was successfully fired in the United States in January last from the 15-inch pneumatic gun, the shell containing a charge of 200 lbs. of blasting gelatine and dynamite; or whether I should briefly consider picric acid as an explosive. I have chosen the latter subject, as perhaps more readily offering some points of chemical interest.

Picric acid is trinitrophenol, $C_6H_3(NO_2)_3O$, and is produced by the action of nitric acid on phenol or carbolic acid, C_6H_5O , a body contained in coal-tar. It is not a nitric ether like gun-cotton or nitro-glycerine, in which NO_2 replaces H in the OH of glycerine or cellulose, forming a nitrate or nitric ether, ONO_2 ; but NO_2 directly replaces H in the carbolic acid, leaving the OH free to form salts. Thus, phenol or carbolic acid, C_6H_5OH , picric acid or trinitrophenol, $C_6H_3(NO_2)_3OH$,

and potassium or ammonium picrates, $C_6H_2(NO_2)_3OK$, or $C_6H_2(NO_2)_3ONH_4$.

Picric acid is a pale-yellow crystalline solid. The commercial acid melts at about $250^{\circ} F.$ to a pale-yellow liquid. The resolidified acid has a specific gravity of nearly 1.7. The acid, when heated in the open air, melts, takes fire, and burns with a smoky flame quietly, at least so far as I have seen it in quantities of a pound. Several of the metallic picrates (*e.g.*, the picrates of potassium, calcium, strontium, barium, and especially of lead) have long been known to be capable of detonation when heated or struck. I will heat separately on pieces of tin-plate a small quantity of dry picric acid, and of ammonium picrate; 2 grains each of dry potassium, barium-, and lead-picrates. The acid and the ammonium salt burn away quietly with a luminous and smoky flame; the potassium picrate gives only a brisk deflagration, somewhat like what a few grains of gunpowder would give. The barium picrate gives a loud, and the lead picrate a still louder, report.

A mixture of potassium picrate and nitre was introduced twenty years since in France, for torpedoes and shells, by Désignolle; and with the addition of charcoal, for powder for cannon and small-arms. Sir Frederick Abel's picric powder, and Brugère's powder, both composed of ammonium picrate and potassium nitrate but in different proportions, were introduced soon afterwards. From that time to the present, a predilection for the use of picric acid or picrates as explosives seems to have existed in France.

Dr. Sprengel, in 1873, first recorded the fact that picric acid can be detonated by means of fulminate of mercury, and that it was a powerful explosive.

E. Turpin has patented (December 25, 1885, No. 15,089) the use of picric acid as a detonable explosive for military and other uses, *e.g.*, for charging shells or torpedoes, or for demolition and mining work. He states that in the state of dry powder it can be detonated by 1.5 gramme (about 23 grains) of fulminate of mercury, and to lessen its sensitiveness proposes to agglomerate it by means of collodion, &c., and mould it into the required forms, or preferably to melt the picric acid, and pour it into the containing vessel. In the fused condition, a suitable intermediate priming is said to be required.

Picric acid is a powerful explosive, and where as much as possible of an explosive has to be got into a given space, its high specific gravity after being fused gives it an advantage.

Picric acid is the predominating constituent of "*mélinite*," introduced into service use in France in 1886-87 for charging shells. *Mélinite* appears to contain another constituent; the present *mélinite* may differ from the earlier, but in the beginning of 1887 it was stated that ether was largely used in its manufacture; and about that time large quantities of ether were imported into France. If used for *mélinite*, it may have been to cement together picric acid grains by means of collodion (a solution of dinitro-cotton in ether and alcohol). The name *mélinite* probably comes from μέλι, μέλιτος, *honey*, from the yellow colour of picric acid, and may have been an

anagram of the too obvious word *mélitine*. I believe, too, that I have seen the word derived from the name of M. Méline, who was one of the French Ministry at the time of the introduction of *mélinite*; this latter etymology may, however, be quite hazarded.

It is questionable whether the quantities of carboic acid available for the manufacture of picric acid would be sufficient to meet large and continued demands for the latter. The available supplies of cotton for making gun-cotton, and even of glycerine for nitro-glycerine, are much less likely to be affected by a run upon them than those of carboic acid which depend on the amount of coal-tar produced, mainly in gas-making.

"Broad Arrow" states that a substance called "cresilite" is being used at Toulon Arsenal for charging shells. It states that it is melted in copper vessels, and poured into the shells in quantity sufficient to two-thirds fill the chamber; the remaining third of the space is then filled with *mélinite* rammed in by means of a mallet.

"Cresilite" is, no doubt, a nitrocresol, a substance having great chemical similarity to picric acid, and also obtained from a coal-tar product. This is a specimen of commercial nitrocresol, stated to be trinitrocresol.

From French and German statements, it appears that a vault of concrete 10 feet thick (not covered with earth, which would act as tamping to the explosive) may be considered as almost invulnerable to the attack of the present *mélinite* shells.

Colonel SHAKESPEAR: Colonel Brackenbury and gentlemen, as this question of powder has been before me for some few months I am very glad to have seen the splendid exhibition that we have had this evening. It occurred to me that we should much like to know what goes on inside our barrels. You might say that was rather a difficulty to begin with, and perhaps it might alarm a good many people. I have brought with me two glass tubes representing gun-barrels, and those tubes were charged from the old powder-flask of days gone by, so that I might get exactly three drachms, and you can see as the result the astonishing amount of dirt there is in one of the tubes as the result of firing the ordinary powder. Another tube was charged with smokeless powder, Hengst powder, which was duly announced in the "Times" just a fortnight ago. I heard of it some time before that, and I have made a good many experiments with it. All I can say about it is absolutely this, that I cannot find it is anywhere wrong. I have not yet tried its propellent powers. I wanted to get down to Shoebury and try it at 2,000 yards; that I have not been able to do, but I have tried it as ordinary sporting powder, and with a small pistol I have driven a bullet through a half-inch board. If you look at the tube there is just a little deposit, but practically speaking it is perfectly clean. That represents what will go on inside our guns if we use that description of powder. I have also here two bottles. In one of them I fired three drachms of this Hengst powder, and you will see the jar is practically perfectly clean. The other bottles show the result of burning three drachms of Curtis and Harvey's best sporting powder, and you see it is opaque. As I have said I have tried the simple propellent power of these powders across my dining-room, and I am inclined to think the smokeless is rather the best, but I rather venture that because I cannot speak with perfect certainty.

Captain CURTIS: Might I ask if those bottles were dry?

Colonel SHAKESPEAR: They were perfectly dry. I am an artilleryman, and we are wonderful hands at doing everything for ourselves. The bottles were washed by myself, cleaned out by myself, and dried out by myself, for the purpose of satisfying myself perfectly that they were so. When this Hengst powder was first

put into my hands it had such marvellous stories attached to it that I was determined to prove them. It was said that water produced no effect whatever upon it. What did I do? I soaked two ounces for forty-eight hours, dried it and fired it, and found it was perfectly good. I boiled two ounces for forty minutes, dried it, and it was just as good as before. I steamed two ounces for twenty minutes over copper-wire gauze, and alongside of it I had the same quantity of sporting powder. I fired them without drying them, when the black powder fused, but this powder exploded only rather slowly. I did that purely to see whether it was true that moisture did not make any difference.

Mr. NORDENFELT: Where is that powder made?

Colonel SHAKESPEAR: It is made in England.

Mr. NORDENFELT: What is the power of it?

Colonel SHAKESPEAR: I have not had time to test it. I have made some arrangements with a friend of mine to go and have a quiet shot on the sands at Shobury. I have only tested it, as I said, in my own dining-room, where I have sent a bullet through a half-inch deal board.

Mr. NORDENFELT: What is the velocity?

Colonel SHAKESPEAR: I cannot tell you.

Mr. NORDENFELT: The penetration?

Colonel SHAKESPEAR: I have not got so far as that. Colonel Sir George Maude, C.B., the Crown Equerry, Captain Norton, and myself, three Officers of the Royal Horse Artillery, fought our guns at the Battle of Balacava, 25th October, 1854, until our ammunition was gone. While together yesterday we spoke of the great advantage of a "smokeless" powder, since after about ten rounds each gun had to pause till the enemy could be again seen, so dense was the smoke that gathered about the guns on that still morning.

Captain CURTIS: I should like to ask the lecturer one question. I do not think he mentioned the charging of the Graydon shells. I have heard that the shell is lined with asbestos in the interior, so that they can fire the shell when charged with high explosives. Perhaps the lecturer can give us some information upon that.

Admiral BOWDEN SMITH: I should like to ask the lecturer whether he thinks there is any danger in carrying these cartridges with the new powder in large numbers on board our men-of-war, where possibly they may be subject to the effect of very high temperature.

Mr. ERNEST SPON: I speak with a good deal of diffidence before an assembly of experts, but I speak rather as representing the manufacturing side than the experimental side on the subject of explosives, with which I have had to do for the last ten years. I should like to ask one or two questions. First, as to the smokeless powder. The lecturer referred to two very interesting experiments, one with the Schultze and one with the E.C. powders. I should like to know what was the date of manufacture of each of those powders, because you must bear in mind that these powders have now been made, one of them perhaps fifteen and the other certainly five or six years. At the time when they were first introduced they were introduced purely and absolutely as novel sporting powders, and it is excessively probable, in fact, I think it is more than probable, that large and material alterations have been made by the manufacturers in each of these powders at the present time; therefore, if we are dealing with these powders at the present time we ought certainly to see their results from very recent samples. With respect to powders containing nitrate of ammonium, I can only wonder that any manufacturer has attempted to experiment with them, because a person who is practically acquainted with the laboratory, as our lecturer is, will be aware that nitrate of ammonium is such a deliquescent salt that it is almost valueless for any purpose in which you require the materials to be kept for any long period. With respect to the Nobel, I have not made this powder, but from its description it appears to me to be a compound of nitro-glycerine, nitro-cotton, and camphor. One objection, which I think will almost entirely prevent it coming into use, is the excessive danger of its manufacture. Nitro-glycerine is a very dangerous substance to manufacture. Nitro-cellulose is not dangerous to manufacture, but in the condition in which he proposes to use it in its composition, that is to say, in the form of pure cellulose in a highly divided state, it is certainly not

a pleasant substance to have to deal with, and should only be handled and dealt with by experienced chemists, as I know to my cost. The compound of these two will be a manufacture that at all times and in all places will require skill of such a character, and the cost of the material itself is of such a character, that I am quite of opinion will entirely preclude its common use. That is a question that must always be borne in mind in the manufacture of powders of any kind. There are some powders that we can make in the laboratory which give most remarkable results, but the majority of those very remarkable powders have such excessive cost, and can only be prepared with such high technical skill, as to place them entirely outside the range of practical technology. In conclusion, I notice that Mr. Deering has not alluded to one or two of the more recent forms of mechanical mixtures of di-nitrobenzole with either of the nitrates. One such preparation that I am acquainted with is entirely satisfactory, its keeping properties are most excellent. It can be prepared in an emergency in almost any town that possesses a large commercial chemical store. I mean to say the materials are almost always available. It is certainly one of those explosives that ought to be better known to military men than it is at present, and in the future I am sure it is one of those explosives that on emergency will always be availed of and used: I allude to *securite*.

Mr. NORDENFELT: It is exceedingly gratifying that men who have studied the subject so deeply as Mr. Deering has, should come forward and tell us all about it. The question of smokeless gunpowder—I do not now speak chemically but from a practical point of view—must be of the greatest importance. The French are employing smokeless powder not only for their rifles and small guns, but for guns up to 6, 7, 8 inches and more. We naturally in this country will have to do the same like everybody else. It is not a question any longer of whether we shall have smokeless powders or not; it is a question of which smokeless powder we must have. I think we owe a tribute of thanks to the Government Department and the Committee for not rushing into a question of this kind and deciding upon a powder and finding afterwards that there is something wrong about it. I may say that generally the Committees of this country do not rush into conclusions. Sometimes it takes them a considerable time to make up their minds, but on the whole I think there is an advantage in exercising such care. Of course France is in a different position altogether; they are liable to the risk of attack any day, they must therefore provide for something at once. Our position as an island, perhaps, keeps us safer in that respect, and on the whole I think we are thankful that the question is not decided too soon. But I repeat again that as far as my small experience goes, it is not a question any longer of whether we are to have smokeless powder or not, it is a question of how soon we can get a reliable smokeless powder. And I mean not only a powder which gives no smoke, but a powder which gives the least pressure per velocity, which leaves the barrel clean, and enables the man who aims the gun to see the immediate effect of his shot and shell. As a manufacturer of quick-firing guns I speak very feelingly, because these guns are on the order of the day, as weapons which must come in very largely for all purposes. The quick-firing gun, like the larger gun, even if not quite dependent upon it, has become very much more valuable since we have smokeless powder to fire. I can imagine in the Navy the advantage is somewhat less because there is always a draught, but in the field when the wind is at your back and very little of it, you have to wait after every few rounds; and the idea that you are covered by smoke is incorrect because the enemy fires into the smoke and with a very fair chance of hitting. Especially for English service, where we have to fire sometimes against undisciplined troops and natives in all parts of the world, I can imagine nothing so awfully demoralizing as the case of a number of natives who are being shot down without having the slightest idea that any shot is being fired, without seeing where it comes from, or knowing anything about it beyond the actual effect of the fire. I believe the nation will some day thank those gentlemen who have given their best intelligence to produce smokeless powder with the higher velocity, and the lower pressure which it gives.

Mr. J. D. DOUGALL: It was not my intention to speak to-day, but having had some connection with the subject of smokeless powder for many years, that must be my apology for doing so. It is a very interesting fact that on March 30, 1868,

a lecture was given in this theatre by my father on a powder that was likely to take the place of black gunpowder. That was known as Schultze's powder, therefore you can well see that for 21 years I have been more or less in touch with the subject. I am not in a position to add much to the learned paper which has been read, not being a chemist, but being a gunmaker I look at the subject from a gunmaker's point of view. I presume I may be permitted to say as far as regards smokeless powder, I have been engaged for the last two years in establishing in this country a powder of that nature for rifles, and I have been using it for the Martini-Henry, for the O'400 and for the O'303, and in all respects that powder has fulfilled the requirements of those who say that such powder must be acquired. So far as I am aware no vital objection could be taken to its keeping qualities, so that I think we have in this country perhaps one of the best powders which can be produced for military purposes.¹

THE CHAIRMAN: It seems to me that the discussion would be rather like the play of Hamlet with Hamlet left out, unless we have a word from Sir Frederick Abel on this subject, which he has made his own.

SIR FREDERICK ABEL: I came here simply to listen. I was personally anxious to hear how my old friend and colleague, Mr. Deering, treated a subject replete with difficulties to him, because, in the first place, he has been overwhelmed with matter, and it was impossible for him to deal with the whole subject, and to bring in some of the more recent varieties of explosives, such as those to which Mr. Spon has referred; and, in the second place, because he was naturally somewhat under restraint in his official position, having knowledge communicated to him which he could not use with that freedom which he might desire. I think we may congratulate ourselves upon the success with which he has treated this comprehensive subject. I have been listening with much interest to the discussion, and especially to the remarks of two gentlemen. I venture to think in reference to those which were made by Mr. Spon that he has a little exaggerated the practical difficulties arising out of the dangerous nature of the manufacture, or out of the great cost which the producers of Mr. Nobel's smokeless powder will have to contend with. Danger is almost impossible to dissociate from the manufacture of explosives, but I need hardly remind him, although he may have had some unfortunate experience in connection with the manufacture of nitro-glycerine, yet that the proportion of accidents which attend the production of the enormous amount of nitro-glycerine products which are used all over the world is very small indeed, in fact, I believe, much smaller than in the case of gunpowder. With regard to the cost of smokeless powders, it is true in some instances the sources of supply of materials from which certain of this class of powder is produced are comparatively speaking limited, but I have not yet met with any case in which demands have arisen for products of new application where we have not had a supply to follow the demand, and I think this will be found to be the case even with such substances of a comparatively costly character as some of those which are being used in this comparatively early stage of the history of the production of smokeless powder. Mr. Nordenfelt has dwelt upon the importance to the country of supplying smokeless powder. It is well to know that, although we are only upon the threshold of its history, we already are obtaining results which give promise of fulfilling the most sanguine expectations of those who desire to use smokeless powder in the military and naval Services. But whilst Mr. Nordenfelt, in his good-humoured way, spoke banteringly of the somewhat slow proceedings of Committees, and of their deliberation, I am sure he will heartily agree with me, in fact, he has done so, in the necessity for extreme caution before we go so far as to say that we will adopt for our ships and for our forts powders possessing characteristics which, with all the knowledge of the chemist, are as yet not thoroughly understood. It is not merely important to have powders showing such low pressures with such high results as regards velocity as to give great advantages over gunpowder, both in this direction and as regards freedom from smoke and fouling, but it is also absolutely indis-

¹ The powder referred to by Mr. Dougall is the S.R. powder of the Smokeless Powder Company (Limited), who are now erecting works for its manufacture.

pensable that a powder of that description should be so stable in its character that it should stand without any change not merely years of storage in our own magazines at home, damp or dry, but also storage on board those ships where magazine accommodation has to be found in localities which are, at any rate so our constructors of ships at present seem to think, almost impossible to keep moderately cool. We have had records of magazine temperatures as high as 140° Fahr. sent home from ships at some of our stations abroad, and, although I am one of those who believe that these temperatures should not be allowed to exist in the magazines of H.M. ships where every difficulty is dealt with by a practical cure as it arises, as such a condition of things may even under the most favourable circumstances accidentally occur, we must see that the powder of the future is a powder which will not endanger our sailors, or the safety of our ships, through want of stability under all conditions at all likely to arise upon service.

Mr. DEERING: Sir Frederick Abel, in his kind remarks, has met some of the objections to which I should have replied. The objection has been made that there are a great many things I have not mentioned. Of course I have had to keep my paper from extending much beyond an hour, and the things I could possibly get through have necessarily been very limited. I could not touch on the ballistics given by the various smokeless powders, because they were under examination. To come to some of the remarks in detail, Colonel Shakespear's interesting observations are covered by my statement that trinitro-cellulose burns away into products wholly gaseous, and that where nitrates are present there will be carbonates and some amount of fouling. Captain Curtis spoke about the Graydon shell. I did just mention it in passing. As he quite correctly says, in the Graydon shell the charge of dynamite was kept from the metal of the shell by a packing of asbestos cloth, and between the powder charge and the base of the shell there were some thicknesses of asbestos mill-board. The arrangements certainly were very ingenious and very interesting, but up to the present time I think only some two or three pounds of dynamite have been fired in this shell, and that seems rather a small quantity, especially when we compare it with the very large quantities recently fired from the 15-inch pneumatic gun in the Zalinski shell: about 200 lbs. of blasting gelatine and dynamite. Admiral Bowden Smith enquired about the liability to decomposition of nitro-powders in the ship's magazine, but that Sir Frederick Abel has been kind enough to answer for me. The temperature of a magazine is sometimes 130° or 140° —I think I have seen a record of 170° in the case of a ship in the China waters, and that would, certainly, if continued for months, put a strain upon the stability of the whole class of nitro-powders. They would need to be extra well washed and purified, and even then the high temperature would become somewhat of a strain when continued for so long a time. Mr. Spon has made numerous interesting points. With reference to what he said about securite, I stated that my paper would mainly be about gunpowder, and ventured to refer members to a paper in which securite is mentioned among other nitrate of ammonium explosives. As to the E.C. powder, although I showed that it gave smoke, I did not in the least mean to depreciate it. A recent analysis for the Home Office showed that E.C. powder contained a large quantity of potassium and barium nitrate which must produce smoke. I mentioned this powder really more in its historical connection, in a complimentary rather than depreciative sense. As to nitrate of ammonium powder and the difficulties attending its use, when a firm like Krupp's has used it in guns up to 6-inch (in ordinary cartridge cases, but mainly in metallic ones) with excellent results, the subject has already been carried beyond the stage of small experiments. The use of such a powder, therefore, cannot be quite set aside on account of our laboratory experience of the hygroscopic properties of nitrate of ammonium. To return to Colonel Shakespear's remarks about Hengst's powder: it consists essentially of nitro-straw, and like other kinds of nitro-cellulose gives wholly gaseous products of combustion. There is an account of it given in the "Times" some three weeks ago; the results were encouraging, but not specially remarkable.

The CHAIRMAN: Before thanking our friend Mr. Deering for his very interesting lecture, I should like to make one or two remarks, which will not detain you long. In the first place, I must guard myself by explaining that I am not in the secrets of the Explosives Committee, and, therefore, what I am going to say is not in any

way official or drawn from official sources. But there have been put into my hands from private sources one or two little notes on matters which may perhaps be interesting, and of which our friend here did not like to speak. Among the powders which are now the subjects of experiment there is one called the "Chilworth Special," with reference to which Major Jones, of Sir W. Armstrong and Co., said lately in a lecture, a copy of which I have received from him this morning, that it gives almost ideal curves as far as the pressures in the gun are concerned, and also a high muzzle velocity. In the 4.7-inch gun it has given 1,990 feet muzzle velocity to a 45-lb. projectile, with $13\frac{1}{2}$ tons maximum pressure. The Armstrong firm have, I believe, taken a good deal of it, and our Government is experimenting with it. Unfortunately, it is one of those powders which absorb moisture very rapidly, and which have to be kept, therefore, carefully from the air; but all powders should be kept from the air. It produces very little smoke and no solid residue. Then for small arms there is the R.C.P., of which Germany has taken large quantities. It has given the following results in our new small-bore rifle. A 45-grain charge gave 2,350 feet muzzle velocity with 19 tons pressure. If we compare this result with the black powder charges which are in use till one of these smokeless powders is decided upon, we find that the black powder pressed into pellets is required by specification to give 1,810 feet muzzle velocity with 19 tons highest pressure and 18 tons mean pressure. Thus we have a sort of idea of the difference between the black powders and one of the new smokeless powders. The French Government have used in their Lebel rifles a smokeless powder, but they have changed at least twice, and do not appear to be satisfied even now. For their field-guns they are using, I believe, one of the forms of gun-cotton treated with some other substance. And now for a few words on another point. We frequently see in the paper statements that English guns have been designed to match the German slow-burning powders, as if these were introduced before the guns were designed. Now, gentlemen, I beg leave to state that the first experiment in the manufacture of slow-burning powders and the first slow-burning powders which were made were tried and manufactured at Waltham Abbey under my superintendence, and the German slow-burning powders came in a considerable time afterwards, and after many of the new guns were constructed. Therefore, I think you may see that England led the way in matters of that sort. When I gave a lecture here in 1884 I explained and showed these slow-burning powders made at Waltham Abbey. I also showed the brown powder which had then come forward (long after ours had been introduced). The first kind of brown powder was originally discovered by an accident, but, as the brown powders turned out to be superior to the slow-burning black powders which we then made at Waltham Abbey, and as the inventors had most frankly communicated the secret to Waltham Abbey, I, as in duty bound, at once recommended that they should supersede the slow-burning powders which we had there developed. I am sure I shall be following your wish in thanking Mr. Deering for the extremely interesting lecture he has given us.

Friday, April 12, 1889.

CAPTAIN SIR JOHN C. R. COLOMB, K.C.M.G., M.P., Member of
Council, in the Chair.

ON THE UNPROTECTED STATE OF BRITISH COMMERCE
AT SEA.

By Lieutenant W. C. CRUTCHLEY, R.N. Reserve.

It is some years since I first had the honour of reading a paper in this theatre, but the time which has passed since then has merely strengthened my convictions that the subject-matter then dealt with is of great and absolute importance to Great Britain generally. I have watched with the greatest interest and pleasure the steps which have already been taken for the better security of our vast properties at sea, and the only way in which one can find fault is, that they do not go far enough, and so I say, "Yet for a man may fail in duty twice, and the third time may prosper."

I do not know that the foregoing words are quite appropriate, but they come to my mind as a reason for another effort to bring this great subject forward. With all Europe an armed camp, with Britain the avowedly first enemy at which ambitious Powers would strike, with the knowledge that failure on our part to protect ourselves would be irreparable, we still continue to display a singular disregard to the claims which our enormous properties at sea undoubtedly have to be protected from the hands of covetous neighbours, and this disregard I feel convinced is solely because the majority of people have never grasped the meaning or magnitude of the question at issue.

I think that my remarks may be classed under four heads—

1st. The necessity of protection of our trade at sea at the commencement of war.

2nd. What would probably happen under existing circumstances on the particular routes touched upon.

3rd. The necessity of an organization of mail steamers to assist the first point mentioned, and the urgent necessity of arming them.

4th. Sketch of a plan of convoy for the Cape route, and some remarks on the vital need of such depôts as the Falkland Islands and Sierra Leone.

In approaching this subject, I must say that I do so with great diffidence. I should scarcely care to be considered an alarmist; but

all the discussions which have taken place lately on the subject of our Navy have, as far as I have seen, been solely confined to the ability of our men-of-war to meet successfully those of our possible antagonists; the protection of the greater part of the commerce of the world has not been touched upon at all, and it is in the hope of assisting to prevent the temporary (it may be) stoppage of this commerce that I have provoked the discussion that I hope will follow the reading of this paper. I do not think that landsmen quite realize the havoc that it is possible to work amongst unprepared merchantmen on the sudden outbreak of war, and I scarcely think that the powers that be care to grasp the question. We have arrived at a period of history when the struggle for wealth, both individual and national, assumes vast dimensions. It is all very well for statesmen, living in their ideal world of hatred of war and injustice, to say that war cannot be permitted on the score of its unreason and brutality. Even the most modern history shows us that a firm and prepared front is the best safeguard for peace and its blessings; and the outspoken words of a celebrated Frenchman, that twenty fast and well-found cruisers would ruin the commerce of Britain, is approaching more closely to the truth than is at all desirable from the British point of view. The fact remains that, at the time of the last war scare, there was an utter absence of any information amongst merchant-steamer leaving port about that time, as to what was to be done in the event of war, and, as at present I do not know that we are any further advanced—presumptuous though it may appear on my part to advance theories on the matter in the face of the great authority that recently stated that it was impossible to arrange even a system of signalling between men-of-war and merchantmen—I must, with every respect, confess my inability to see where the difficulty lies, and I think it quite within the range of practical measures to ensure a far greater amount of safety for, or to, our steam tonnage in war-time than it is now in possession of.

Without going into absolutely accurate figures, my statistics, as follows, are taken from the "Statistical Abstract for the United Kingdom for 1887." By that authority I see that the import of grain into the United Kingdom is valued at over 48,000,000*l.*, that various other articles of food, such as meats, both fresh and preserved, cheese, potatoes, and tea, come to another 31,000,000*l.* per annum. That this is a startling fact I think will be admitted when we know that England is victualled for three months at the longest, and when we consider the fair probability of the stoppage of our food supply at the commencement of a maritime war; what would this mean to the enormous masses of the working class, who find extreme difficulty even now in keeping soul and body together? To compare small things with great, what happens if snow delays the ordinary traffic to the metropolis for three days? And what would happen were our grain supply to be cut off even for one month? There would be such internal misery and dissension that one might well shrink from the contemplation of the hideous pictures that ordinary foresight could freely paint. We know the excesses to which a French mob

can run, we lack the experience fortunately of the capabilities of an English one, yet recent Trafalgar Square riots show what excesses can be run to, even under an exceptionally strong government, and it requires no great stretch of imagination to foresee the possibility even in our own time of a repetition of the Commune should the food supply of England once really fall short of the amount necessary to feed the masses of the population as they are fed to-day.

I have found it useful of late years, when thinking over certain things connected with life on board ship, to say to myself, "What is the worst combination of circumstances that can possibly happen?" and, having made up my mind what the worst could be, I have added an *x* to represent the unknown, and then prepared to the best of my ability for what was to come. It is a plan that I think has its merits, for although on suggesting that a certain contingency might arise, one is usually met with the answer that it is very unlikely, the fact remains that it is possible, and so I contend should this same question we are now discussing be looked at.

I spoke just now of a fair probability of the stoppage of our grain supply. Is there a fair probability?

Whatever the relative strength of our Navy may be when compared with that of France, I will assume for the sake of fair argument that it is equal to the combined warships of France and Russia. Not all our Naval experts, perhaps, would admit that it is so. There can be few more difficult questions than the relative theoretical strength of navies or warships, but that is not the point just now. Were we at war with France and Russia combined, what remains to protect our commerce against the dozens of fast raiders that would be turned out in all directions to capture our merchantmen? The "Alabama" was no question of a warship. She was no better able to fight a battle than a very second-rate merchant steamer could now, and she sunk in her first engagement; but she was a raider that destroyed the commerce of America afloat, and drove its trade to foreign flags in such a manner that even that vast self-supporting nation has been unable to regain its place on the sea.

That happened at a time when commerce was small compared with what it is at present, and when speed at sea was not anything near its later developments. These two factors taken together mean an increased rate of destruction in war-time, and the entire captures of the "Alabama" could be easily eclipsed in one week now by one fast and very moderately armed merchant cruiser. This is no question of speculation. We know exactly in which direction our enemy would strike at us, and it would be at our weakest and most vulnerable possession—our shipping. I hear it frequently said that in the event of war our ships are to be transferred to a neutral flag. What is intended by that phrase I fail to understand; scarcely any *collection* of neutral flags could take over our ships and work them; and even supposing such a plan were in readiness, would an enemy of ours respect such transfer? I think not, and even were they to respect the ships, France recently declared rice contraband of war, and so even the neutral flag would be unable to continue our grain supply

under those conditions. But, assuming that this transfer were possible, what is the result? Trade follows the flag, and our ships under a neutral flag would mean simply ruin to England. I cannot conceive anyone calmly contemplating the transfer of our ships to foreigners. Our ships sailed by men of the nation under whose flag they sail, our seamen idle and earning nothing, the shipowners with their realized capital laid up and unable to use it (supposing it were realized), and our *one big trade gone*. I confess to have no liking for the picture. Our stronghold is the sea. We have claimed the mastery of salt water for centuries, and it would be a poor climax now to seek the cover of a neutral flag, and confess our inability to protect our own. Here I cannot resist quoting from a speech of Sir C. W. Wilson, at Bath, 1888, before the British Association:—

“I may add here that if there is one point clearer than another in the history of commerce, it is this—that when a State cannot effectually protect its carrying trade in time of war, *that trade passes from it and does not return*. If England is ever found wanting in the power to defend her carrying trade, her fate will only too surely, and I might also say justly, be that of Venice, Spain, Portugal, and Holland.”

It may be said that the subsidized steamers on the Admiralty List will be quite equal to this work, I mean that of looking after an enemy's raiders. Doubtless, they would be if there were enough of them fairly started with their enemy in view; but this same fair start requires greater consideration than it has yet received.

They could not satisfactorily be taken from their own routes. The want of them would be too surely felt, and the need of them too vital, as I shall endeavour to show later on—and to sum up this part of my argument in a few words, there is the commerce of England at sea practically undefended: hostile armed merchantmen hastily and perhaps indifferently armed, but flying a Government flag, would take our vessels at a disadvantage (especially Russian cruisers expressly intended for this purpose), and the result would be the disappearance of the British flag as the carrier of the world, to be replaced by the stars and stripes, and Teutonic and Scandinavian emblems.

The foregoing remarks have, I hope, pointed out the necessity for protecting trade at sea on the commencement of hostilities, and the absence of means for doing so at present. There is our Navy; the largest and best steamship company in the world, but still too small for the work it has to do, and so must either take in more capital, or amalgamate with someone that can help the work in hand. Perhaps both courses might be adopted with advantage.

The question as to what would probably happen on all the trade routes of the world, under existing circumstances on the outbreak of war, is far too large to be dealt with on such an occasion as the present. The ocean trade routes of the world cannot be glanced at even, within the limits of this paper. The subject also requires a greater amount of detailed knowledge than I can pretend to bring to it. I therefore propose to confine my remarks to the trade that

would probably spring into existence between the two great Capes and the Channel. But first, I should say a few words on the probable method of dealing with captured vessels—it is a large field for speculation.

In the late Naval Manœuvres it happened that several merchantmen were brought to by cruisers, and captured and released—now what does this mean? It means simply that vessels employed in their peaceful avocations, in utter ignorance of even sham warfare, were stopped by a shot being fired across their bows. So far, the proceedings might have been the same had it been reality; but in place of releasing the captive to pursue her voyage with a mark on her to show she had been taken, what would have happened in actual warfare? What would an enemy have done with the captured vessel? Let us assume her to have been a P. and O. ship with a large crew and a number of passengers. I will suppose her to have a crew of 120 men and 200 passengers, and that four days' fair steaming would take her into an enemy's port, either one side or the other.

In all the discussions which have cropped up on this subject of merchant shipping in war-time, the Declaration of Paris has always formed an important item of the debate. By many it is looked upon as an unmitigated blessing bestowed on Great Britain—by others it is regarded as a great mistake on our part, and one that should be repudiated without delay. I cannot say that I am of this latter opinion—this treaty, in spite of some alleged informalities, was undoubtedly entered into in furtherance of the interests of modern civilization—it was subscribed to by the Plenipotentiaries of the majority of the Great Powers of the world. But I cannot believe that it was the intention on the part of the representative of Great Britain to place that Power in a far worse position than its neighbours—I say *far* worse, because with a frontier which, for us, is bounded by the farthest shore of the sea, our outposts by the generally understood meaning of that document are to be simply unarmed patrols—that having the eyes to see and the strength to act, they are to be deprived of all or any means of defence, that strong and speedy though they may be, they are to have no refuge, save in flight from the meanest and least powerful of an enemy's vessels, and in proportion to our greater number is the power of a possible enemy to inflict damage which could not be returned by us in similar coin. The worst part of this is, that we should be unable to profit by our national trait of taking the first beating kindly—that meaning that we should cease to be the market of the world, and therefore hopelessly ruined. My reason for these latter remarks will be more apparent as I proceed.

Now the Powers that can fit out privateers are three, viz., Spain, Mexico, and the United States, and it would be difficult to imagine less likely adversaries. Privateers having to take their prizes into port for a legal decision as to right of capture, and the Great Powers having forfeited the right, or rather having given it up voluntarily to fit out privateers, it would be necessary that the vessels preying upon our commerce should possess the licence to sink, burn, or destroy:

and this power is only possessed by a man-of-war or a vessel fitted out by the State with that end in view.

There are three courses open with a captured liner. To send her into port with a prize crew.

To take the people out of her and sink her, or to sink her as she is.

In the first case, what sort of a prize crew would be required? It would need Officers, engineers, and men, and even if every man of the prize crew had a belt full of pistols, to compel the original crew of the ship to work, when away from the guns of the captor they could not do it, unless in fairly strong force, say fifty all told, and that number would be a serious drain upon any ship's company. Could less do it? Knowing something about a ship's engine-room, I doubt it.

A torpedo-boat would be a far better escort, and if the ship were unarmed, would be the best thing.

If again it were proposed to destroy the capture, what could be done with the passengers and crew, including, perhaps, women and children? There are three courses open. To have in readiness a tender to receive them, equally as fast as the captor. To take them on board the captor, a course open to many objections one need not particularize, or to place them in their own ship's boats, if there are boats enough, and turn them adrift. A great objection to all these methods would be the loss of time taken up in pursuing any one of these courses.

In Mr. Kinglake's *History of the Crimean War* there is a very interesting chapter relating to the *Coup d'Etat* of Napoleon the Third. In it he enters exhaustively on the different kinds of slaughter of non-combatants, as compared with the shooting in Paris on that occasion. I do not find in it any trace of a case similar to the latter one, and it might, perhaps, be fair to assume that to a humane captor, a passenger ship would be a sort of white elephant, if captured when far away from a home port; something may, perhaps, be said on this subject as against arming them, and thus rendering them combatants. But I am afraid that modern warfare will probably eclipse in its rigour anything the world has yet seen, and in the endeavour of an enemy to damage the commerce of England, no consideration of ruth or humanity would be entered into. I hope I may be and am mistaken, but I think that ships would be sunk promiscuously whenever and wherever they were found, and that this would be carried out even by humane Officers as necessitated by the needs of war.

I presume that no probable adversary of ours could fit privateers without our being also able to do so, so that if it comes to arming merchantmen to do duty as men-of-war, we ought to have the advantage.

With the Suez Canal blocked, which is only a fair risk to take into account, and is moreover a probable contingency, and certainly a point for which an enemy would strive, the trade from the East would naturally be diverted to the Cape routes, not even altogether because of the stoppage of the Canal, for it is a question whether fast vessels would not rather trust themselves to the open sea if they were

sure of their coal supply, in preference to narrow waterways like the Red Sea and Mediterranean, unless they were well convoyed. Now we know that men-of-war, even if they could be spared from near home, do not care to keep the sea long, and steam long distances. It is nearly 6,000 miles to the Cape of Good Hope, and how long would it take to get the vessels out there that would be required on the outbreak of war to protect the trade that would centre in Table Bay: if there were war next week, what armed ships are there to protect it? The "Raleigh" and the "Penelope," with a few smaller cruisers. I don't think that the weather on the Agulhas bank would suit any of them very long, and I should say that three vessels of large coal capacity with Réunion or some port in Madagascar for a dépôt or coaling station, could, if sent out by an enemy, have a very pretty hunting ground for their undisturbed amusement for some considerable time. I have the French Messageries mail steamers in my mind as I write, and nothing on the Cape station at present could catch them at sea; so far as men-of-war are concerned, there would be little trouble there on the subject of passengers, and Jack adrift in an open boat would excite no great amount of sympathy; he is used to drowning.

While on this matter concerning the Cape of Good Hope, and the natural convergence of trade to it in war-time, I should point out that from 5,000 to 6,000 tons of coal is the usual stock in the place—the import was 110,000 tons last year, and that only sufficed for the ordinary traffic, so that unless the coal-fields of Natal develop largely, this item will prove a serious source of trouble. The coal import there is largely done by Italian sailing vessels, but as there is little doubt as to coal being contraband of war, I don't see that it would help us much—it would be curious to see Table Bay full of steamers waiting for coal: true, they would be in comparative safety, but what about the people at home who are waiting for the supplies thus detained?

Now take the Cape Horn route and the trade by steamers through the Straits of Magellan: one important item would be the grain from the Pacific ports, the value of which alone amounts to more than 4,000,000*l.* per annum, and is now conveyed to England principally by sailing vessels, but which would, on the outbreak of hostilities, have to be carried by steamers. With the French Messageries steamers running to Rio de Janeiro, by far the fastest vessels on the route, and ready as they doubtless would be on the outbreak of war to take the initiative, what are the means at hand to catch them or hinder them from picking up our sailing vessels and steamers in all directions? The "Cleopatra" cannot be everywhere, and after the "Swallow" is mentioned, the rest of the south-east coast squadron might as well be in Portsmouth Dockyard for anything they could do to protect our ships in that direction, and if they cannot do so, where are the vessels to be sent in a hurry to take up that duty on the outbreak of war, and generally to protect this route? It must be borne in mind that with the Suez Canal blocked, Cape Horn is on the road home for steamers from Australia as well as from New Zealand, and

that therefore the traffic on this route would increase enormously—also that both steam and sail routes from the Horn to the Line are not far from one another, which fact is all in favour of the enemy—also that the remarks as to scarcity of coal supply at the Cape, should the trade increase suddenly, apply with additional force to this route. The Falkland Islands are our only depôt, the stock of coal there is not worth speaking of, and it is a long distance to steam from Australia to Buenos Ayres or Rio. I do not see that the half-dozen fast cruisers now in reserve would be too many to patrol this route, but I cannot resist the idea that they would find their work fully cut out a great deal nearer home, and here I quote words used by Admiral Colomb in this theatre :—

“Is it not reasonable to assume that the 900 steamers in France thrown out of ordinary commercial work by the war would be largely employed for raiding purposes?” He also mentions the 1,800 or 1,900 vessels leaving and entering the British ports daily, and, finally, “it seems as if, unless there are armed ships *on the spot wherever shipping is thickest*, a single raider in the short time at his disposal might do enormous damage.”

I think I have shown that our commerce, as totally distinct from the question of fighting between fleets of battle-ships and the defence of the country itself, is not satisfactorily protected. I should say that the grain trade alone, which would be diverted to these two routes in the event of the blocking of the Suez Canal, would be to the value of 10,000,000*l.* per annum at least. I think it will be generally admitted that we should, under existing conditions, sustain our heaviest losses during the first two months of war, before the vessels we rely upon to run down the enemy's raiders are enabled to arrive at their stations, and this being so, does it not show the necessity of some vessels on the spot being put into some such state of fitness as shall enable them to take part in the forming of convoys and the protection of them to a certain extent, until they can arrive at what may be termed the fighting ground of battle-ships? The mere fact of *any* merchant steamers being selected to carry guns on an emergency is quite enough for my argument. What one can do another can within moderate limits. By this I mean that the difference between the subsidized vessels and an ordinary first-class mail steamer is not such as to vitiate my argument; and even if inferior vessels were used we could afford to lose ship for ship far better than any of our neighbours.

If the control of the highways of the sea is our heritage as we fondly imagine, and we are to retain it, it will not be done by a mere comparative superiority of strength, it will have to be by a decided and decisive one, and unless the fleet of 150 cruisers asked for by Admiral Hornby is to be called into existence, in no other way can it be done than by securing the services of numbers of merchant steamers; scarcely any effort that I could imagine would do so satisfactorily on the outbreak of war with an enemy knocking at many of our hundred gates. With our Navy admittedly far too small for the work it has to do, is it not worth while *now* to commence and see

what can be done in the way of organization and arming of some of the most suitable steamers on the routes of which I have been speaking? It is so easy to do most things if one only has time, but the want of it in this case would be simply disastrous; time meaning leaving the victualling of England to take its chance. Diplomacy has its day, and that day is usually a long one, giving an enemy every opportunity to make sure of our intentions and to be ready as soon as ourselves to endeavour to strike the first blow. What better opportunity could there be than the present to institute these reforms necessary for our safety, and which if taken in hand when any relations were strained with a foreign Power would undoubtedly make matters worse, and perhaps precipitate events which might have been avoided and would perhaps be regretted?

It is now a matter of history that at the time of the last Russian war—scarcely their cruisers were encountered in the most unexpected places, and the inference is that they will be still better prepared when the inevitable occasion comes. What our preparations were it is needless to discuss; but I presume it is well known that we were anxious to buy and pay double cost price for at least one fast cruiser that could both keep the sea and fight. Now, if it was considered necessary then to invest half a million of money in one solitary instance, would it not be worth while to invest a moiety of that sum in putting some of our own vessels into such a state as should in a great measure obviate the necessity for such a prospective outlay?

Before proceeding further in this matter I should like to state that I do not propose or contemplate a convoy of armed merchantmen without a man-of-war to take charge of them. I should not propose a collection of British ships to afford target practice for an enemy, which might happen if there were no ship present capable of meeting a man-of-war, and preventing a game of long bowls, where the odds would be all against the vessel showing the biggest side. And here I would like to suggest, in the most unobtrusive manner possible, that the length of the cruisers mostly built now for the protection of our commerce is a fatal bar to their efficiency. I should rather say their want of length, for nothing under 350 feet is fit for deep-sea speed.

There was a vessel built some little time since by Lord Armstrong, who is reported to have said that she was more than a match for a fleet of armed merchantmen; of course such an authority is a difficult one for me to question, but I think a little may be said on the other side. Steam is a great leveller of odds at sea, and the stem of a merchant steamer is almost as formidable as that of a man-of-war; there is the force that, properly applied, is capable of sinking any vessel not strong enough to resist it, and I cannot dismiss the idea that a convoy of merchantmen is not to be handled with the impunity which is commonly imagined. There are certain easy formations which could be maintained with no risk to themselves, even by vessels not accustomed to keep station, that would put even an "Esmeralda" in a fix if she ventured amongst them, presupposing there were any shred of organization, which there undoubtedly would be if they ever found themselves in such a position. There is no truer saying, and it

has been applied very closely to naval affairs, than that "History repeats itself," and if a fleet of merchantmen has succeeded in beating off an enemy before, there is at least the inference that it may do so again; but in the notable instance in which it did so, the ships were well organized and disciplined, and this would necessarily be a *sine quâ non* now, and herein lies the great gist of the matter.

Now, if it is said that it is of no avail trying to organize merchant shipping for its own defence or for a certain purpose not immediately connected with its own pursuits, look at the vast strides the P. and O. Company has made lately towards manning and officering its ships with Reserve men. I say *vast*, because small though the actual numbers of the men are, the bare fact of the expression of the wish of the directors of that company has been enough to foster the scheme amongst their *employés*. How or why that wish came to be expressed is a matter unknown to outsiders, but it is reasonable to suppose that the directors of that company did not consider it would be detrimental to their interest as the first mail service of England. Undoubtedly, many vessels of that fleet, other than those on the subsidized list, would have to play an important part in that quarter of the world to which they trade, should war occur. The interests there would be far too valuable to sacrifice by taking the vessels off the route. It would be too fatal a mistake to part with one item even of our trade in war-time that we could possibly retain. And so to return to the Cape route as the one immediately under discussion, I should say that if considerable trouble had been expended on the preparation of vessels to look after themselves and perform some of the work necessary in war-time between the Cape of Good Hope and England, none better could be selected than those of the Union SS. Company of Southampton. Having sailed in them for many years I am fairly justified in expressing an opinion on the matter. What the directors of that company would say to my suggestion as to the use to which it is possible to put their fleet I know not, but I know that if the expression of some wish at headquarters has been enough to influence the P. and O. Company, I do not imagine for one moment that the Union Company would be less willing to move towards their own interests. Were they once convinced that such a course was advisable, no better ships could be selected for the trial of any new plan. They are extremely handy vessels, can average about 14 knots per hour, and sailing from Southampton offer exceptional advantages in favour of the end I have in view. I believe it possible in such a port as Southampton to practically retain ships' companies for years and years together, and I instance this particular company for the reason that it and the Castle Line are at work on the route under consideration. And having suggested the possibility of such use of mail steamers, it somewhat rightly devolves on me to show the practicability of the scheme.

Here, again, comes in history as a precedent: in all our great naval struggles, notably in the case of the Spanish Armada, each port sent out its batch of ships under their own separate organization, and yet capable of working towards one common end.

This matter of the working of groups of merchant or mail steamers is capable of easy solution; any man of ordinary ability appointed to work a group of ships to carry out a well-planned scheme could do it with little difficulty if properly instructed as to the broad outlines of the plan; the appointment would be little different from that of the mail officer or agent of the past. He would know accurately the movements and routes of his own vessels, and where they coincided with those of other lines; and if Marine Superintendents of large steamship companies receive honorary commissions in the Naval Reserve they would doubtless also be pleased to perform any duties which might fairly go with their honorary rank. I have not the least hesitation in saying that the majority of these gentlemen would be the ones to work the plans satisfactorily. Even a small subsidy to the companies concerned would produce the ends desired in the time usually taken by merchantmen to earn their money, and that is the shortest possible. I say a subsidy to lines that are not in receipt of a retainer for their vessels, for it would not be reasonable to expect any company to work, even for the common weal, if they were not paid reasonably for their efforts; it might also well be a matter to be considered in the planning of mail contracts.

I have spoken of the subsidized vessels at present on the Admiralty List being required on their own routes; the North American trade would ill spare its fastest and best vessels under the conditions of modern warfare, still less could vessels on the Australasian lines be taken from their ordinary traffic; the stoppage of trade with our Colonies would be a vast misfortune to contemplate, the exports of food alone from Australia amounting to 3,000,000*l.* in 1886; and part of the enormous grain supplies we receive from North America would surely find its way to England by the fastest vessels procurable.

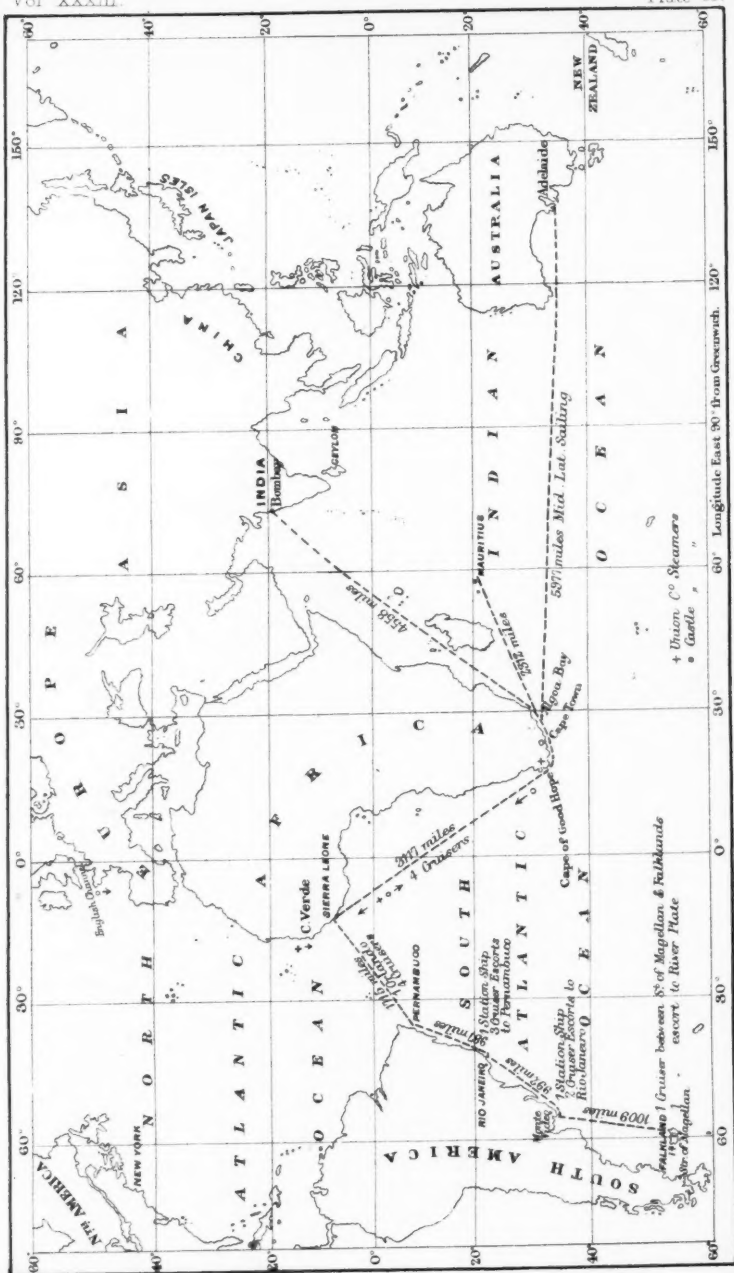
There is no armament abroad worth the name of such to put into any vessels that may be required on an emergency; a spasmodic attempt was made six years ago to meet the want, with little result, save the water carriage of many obsolete weapons. I do not, however, say much on this subject, as armaments have changed very considerably since I first made any remarks on it, and we must move with the times; but why not try the experiment of putting a decent armament of quick-firing guns into the fleet of vessels I have mentioned? With depôts for ammunition on the route, the matter would be capable of a great facility of working, and a fleet of well-disciplined, sound, fast, and useful vessels is ready, so to speak, constantly.

The question of the magazine is, I imagine, the most serious one by far; no large supply of ammunition could be carried owing to the difficulty of port regulations, dock rules, &c., but quick-firing ammunition is widely different from the old system of cartridges and not nearly so dangerous, so that I do not look upon the difficulty as insurmountable—the guns themselves are no obstacle, the great difference of weight between modern and old-fashioned guns having removed one great objection; should any such scheme as this get a trial and prove a failure, the expense would not be worthy of consideration as compared with the great interests at stake, though I do not believe that in the

vessels I have indicated failure would be at all probable, and what can be done in one service can be done in another if it be proved worth while. There has been a falling off lately in the numbers of the First Class Reserve men; there used to be an idea that reserve men were not popular with shipowners, in consequence of their liability to be called upon for service; that is entirely exploded, both in the case of Officers and men, but if this force be worth being taken care of, no better system of encouragement could be adopted than by so arranging matters that the leading lines of steamers should seek to obtain them. I am well aware that nothing is likely to succeed in this commercial age that does not give a fair prospect of gain or advantage to someone concerned in the business in hand; this present matter is an extremely big one, and the bearing of it on the merchant service of England is not seen by all. By no amount of legislation would it be possible to produce the same results from a Board of Trade point of view, as would this scheme were it given a fair trial; it would mean a revision of the officering of the mercantile marine, it would put an end to the very unsatisfactory discussions that wage about superior certificates, and it would produce a class of men that could fight their ships as well as work cargo. In other words, it would mean that the Naval Reserve, in place of being a force costing little and doing a proportionate amount of work for value received, would become to all intents and purposes a reality, it would have arms to fight with, and a coherence that at present it does not possess.

The Volunteers of England are much exercised in their minds now as to their efficiency, should they be called upon to take the field; they want a bigger capitation grant, great coats, rifle-ranges, and many other things that they will doubtless get. But is the danger of an invasion of England to be spoken of in the same day with the extreme peril our commerce is in at sea? Yet this force, the Naval Reserve, which I suppose is intended to correspond to the militia, has, from its very beginning, "been kicked loose and billeted nowhere," and that this is so is, I feel convinced, because people will not look at things from a logical point of view. If we lose our trade and the command of the sea, the fact of an invasion, more or less, will little influence the destinies of England, and all the armed merchantmen we could muster would little avail us without a corresponding increase of our men-of-war on the routes here under discussion, to exercise the superior controlling power and provide anything like adequate protection to the enormous wealth at sea.

In the accompanying map it will be seen that the two routes of the convoys from east and west converge at Sierra Leone, and that eighteen vessels (men-of-war) are required to form convoys, irrespective of armed merchantmen. Of these eighteen, three may be termed station ships, and one should be somewhat after the style of the "Orlando," to remain on that part of the route between Pernambuco and Sierra Leone. I think it would be far better were the same vessels to remain on their own part of the route, which may be divided on the east coast of South America into four portions. I have assumed a speed of 12 knots for the convoy throughout, and my reason for



saying that the men-of-war should remain on their own position of the route is, that they, not being accustomed to steaming long distances, could not, without occasional stoppages, do the work which is the everyday business of the merchant steamer.

The patrols would be—

From the Falklands to the Plate,

The Plate to Rio de Janeiro,

Rio to Pernambuco,

Pernambuco to Sierra Leone.

Sierra Leone would be the rendezvous also for the Cape of Good Hope convoy, and from that port into Channel they would, of course, require far more careful watching than they have hitherto had. I do not express any opinion on that subject, but I scarcely think that any naval Officer present will say that I have taken an exaggerated view of the needs of these two routes for men-of-war only; even as it is, there are numberless difficulties to be encountered, one of the principal of which would be the coaling of the men-of-war. On the Cape of Good Hope route the convoy would be formed in Table Bay, and there, if it were to be had, the vessels would take coal enough to carry them to Sierra Leone. If private enterprise or Government forethought had not foreseen the want of coal at that port, there they would remain until the necessary supply was forthcoming; but with the south-east coast of America it is different. Between the Falkland Islands and British Guiana, which, for all practical purposes, may be taken to mean the West Indies, we have no port; and whether the Argentine Republic and Brazil would consent to our using their ports as coaling stations for our men-of-war, is a question that may perhaps have to be argued after the event; but if this were so, it would point out that the coaling of men-of-war would have to be done at anchorages on the coast; or else Rio would have to be considered a central point, and Sierra Leone and the Falklands considered as finals. I am under the impression that this, the south-east coast of America, would require a great deal of attention. At a speed of 12 knots, it is six days from Sierra Leone to Pernambuco, three more to Rio, three more to Buenos Ayres, and three more to the Falklands.

The ships on the South-East Coast Station are the "Flamingo," "Rifleman," "Cleopatra," and "Swallow"; on the Cape and West Coast, "Acorn," "Alecto," "Bramble," "Curaçoa," "Goshawk," "Landrail," "Penelope," "Pheasant," and "Raleigh"; and I must leave it to experts to say what would be the value of these vessels if used for convoys.

When I was last at the Cape I got the positions of all the mail steamers, and placed them as shown on the map. It was the 4th of January, and I concluded that if war were declared on that day, by the end of the month Table Bay would be filling up with vessels stuck for want of coal. I do not know whether it enters into the present programme of defence to look after Sierra Leone and the Falkland Islands, but I do not see how they can escape playing a very prominent part in any future naval war if properly utilized. The French had a big coal dépôt at Goree years ago. I should say it would be a

very serious thorn in our side if we ever have the misfortune to quarrel with them, and have no similar depôt in the vicinity, whilst the Falklands are simply of *vital* importance to vessels coming from New Zealand and Australia.

I do not know whether my arguments carry any amount of conviction with them. I am so firmly convinced in my own mind of the accuracy of what I state, that I have not, perhaps, sufficiently emphasized detail to satisfy all my hearers, but I do hope that the discussion which follows this paper will help to show that the danger that threatens England is not invasion but the destruction of its wealth at sea.

"STATISTICAL ABSTRACT FOR THE UNITED KINGDOM (No. 35), 1887."

No. 26 (p. 51). *Quantities and Values Imported into the United Kingdom.*

<i>Corn.</i>	Wheat	55,802,518 cwt.	£21,337,918
	Barley	14,239,566 "	3,761,497
	Oats	14,462,943 "	3,488,329
	Maize	31,167,325 "	7,548,272
	Other kinds	6,334,360 "	1,854,868
	Wheaten flour	18,063,234 "	10,027,884
	Flour, other kinds	895,961 "	272,025
	Total of corn	140,965,907 cwt.	£43,290,793
	Bacon and ham	3,927,602 cwt.	£8,733,776
	Beef	874,248 "	1,811,237
	Cheese	1,836,789 "	4,514,382
	Salted and fresh meat .	826,794 "	1,681,116
	Preserved meat	520,239 "	1,351,769
	Potatoes	2,763,357 "	974,904
	Rice	5,019,512 "	1,873,551
	Tea	221,841,490 lbs.	9,782,998
	Total	237,610,031	£30,723,733

No. 30 (pp. 70-71). *Quantities of Grain Imported into the United Kingdom.*

	<i>Wheat.</i>		
From	U.S.A. Pacific ports...	9,978,202 cwt.	£4,014,939
	Chile	2,206,272 "	836,529
	British India	8,511,512 "	3,102,964
	Australasia	1,347,151 "	531,243
	South Africa, British Possessions	49,501 "	18,398
	Total	22,092,638 cwt.	£8,504,033

"ANNUAL STATEMENT OF THE TRADE OF THE UNITED KINGDOM FOR
YEAR 1887."

Preserved Meats.

Australasia	167,161 cwt.	£386,810
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Fresh Mutton.

Australia	42,445 cwt.	£77,608
New Zealand	395,638 "	841,208
Argentine Republic ..	251,273 "	442,597
Total	689,356 cwt.	£1,361,413

Rice.

Japan	167,799 cwt.	£67,641
Siam	39,491 "	13,225
China	26,616 "	13,287
South Africa, British Possessions	250 "	120
Mauritius	19,200 "	6,325
British East Indies ...	4,309,278 "	1,506,200
Total	4,562,634 cwt.	£1,606,798

Coffee.

South Africa, British Possessions	3,087 cwt.	£9,847
British East Indies ...	272,682 "	1,178,150
Hong Kong	718 "	2,476
Total	276,487 cwt.	£1,190,473

Admiral BOWDEN SMITH: Mr. Chairman and gentlemen, I think it is a very good thing for this Institution and the country also, when a gentleman of Lieutenant Crutchley's experience comes here to read a paper on a subject of so much importance as this. We are very glad also to see you, Sir, in the chair, for I do not think anyone has done more than you have to bring this subject before the country. It is admitted that the protection of our commerce demands a large proportion of cruisers, and, I think, all our hearts have been recently gladdened by the very excellent, and, I think I may say, judicious shipbuilding programme, which has been put before the country by the First Lord of the Admiralty, and which has already practically passed the House of Commons. Unless, however, we have our organization complete, and make preparation for war in time of peace, we shall not get the full benefit out of these cruisers. There is a subject in connection with this matter which was touched upon by Lieutenant Crutchley in the first part of his paper, which I think of great importance—I allude to the question of communication and signalling during war between our cruisers and ships of the mercantile marine and between one merchant ship and another. I do not think that this question has been sufficiently considered at present. We heard last year that Lord Charles Beresford was about to bring forward some motion on the subject of signalling, but owing to the great demand on the time of the House of Commons, he was unable to do so. Of course we all know, all who are accustomed to the sea, that we can communicate with each other at present during the day time with flags, by the International Code-book, but there is no means whatever of communicating

at night. What does that mean? It means that during war-time one of these magnificent steamers that Lieutenant Crutchley has been talking about may have some valuable information to give to one of our cruisers, or a cruiser may have some very important communication to make to her, and neither can do it unless they lower a boat or approach within hail, which is not always an easy matter. Our possible future enemy may be kind enough to involve us in war during the summer when the days are long and the nights are short; but on the other hand we may be dragged into a war in winter when, as we all know, on some dull days, we could have no communication with each other between 4 o'clock one afternoon and 7 o'clock the next morning. Many Officers in the mercantile marine have thought about this, and two or three gentlemen, considering that our system in the Navy is too difficult and complicated, have sent up some plans to the Board of Trade for night signalling, and it has been my good fortune to have to look into those plans and report upon them. I examined them carefully, and came to the conclusion that they were certainly not so complete as our system, and were not more easy or more simple; but I would not trust to my own judgment only, and, therefore, put myself in communication with the Flag-Captain at Portsmouth, and asked him to be kind enough to give me the opinion of his Signal Staff. I sent these proposals to him, saying, "Please put aside every prejudice, and tell me if you think they are workable, and if they are more simple and more easily learned than our own." He replied that they were workable, but that they were not more suitable and not more easily learned than our own. So I came to the conclusion that if any system of night signalling is introduced, it must be the Morse system. When I say the Morse system, I mean the system we use in the Navy, and which was first introduced by my friend Admiral Colomb. We know that it is to him that we are indebted for having first introduced this flashing system of night signalling into the Navy. Now, I wish to point out to gentlemen of the mercantile marine the advantage of this Morse system. The only apparatus necessary is a lamp with a shutter or slide, which will cost, perhaps, 45s., and a steam whistle, which is already fitted to every steamer. There is no code-book required, and signalling can be carried on under any circumstances, by night as well as by day, and in fog as well as in clear weather. It would require a trained and qualified signalman in each ship to work it; but why should not our large steamers carry one qualified signalman? I do not for a moment suppose that night signalling could be carried on in our sailing ships or smaller steamers; but if the Admiralty and the Board of Trade would give their sanction it might be introduced into our large mail steamers, such as those of the P. and O. line, and the magnificent ships that cross the Atlantic. They might, perhaps, if it were authorized, provide themselves with a lamp and allow one quartermaster of each ship to be trained and requalify once a year, as our Naval Reserve men do. We might then have a system of signalling between Her Majesty's ships and the merchant service, and in the merchant service itself between one ship and another. If this system were once introduced it would probably become popular. When I was in the "Britannia" a few years ago, we rather went in for the use of the semaphore as well as the Morse, and I was surprised to see the way the boys took to it. I used to see them in the boats and in the cricket field making signals to one another with their arms. I believe, that if this system were introduced into the mercantile marine, it would grow; young Officers would learn it, and it would be taught on board the "Conway" and the "Worcester." The Morse system now holds the field, but if anyone can propose a better and simpler plan I hope he will do so.

Admiral Boys: I want to ask the lecturer one question with reference to the route between Sierra Leone and the Cape of Good Hope. He has not mentioned either the islands of Ascension or St. Helena. St. Helena is a coaling station very fairly fortified, and perhaps the lecturer will presently give us the reason why he has omitted it. A curious circumstance happened to me only yesterday before seeing or hearing this paper. Captain Crutchley says history repeats itself; I saw yesterday, in a shop window, an old print of two ships, which attracted my attention; it represented a British brig being captured by a French privateer. The privateer had lowered a boat; the brig was to windward; the brig put her helm up, ran clean into the privateer, carried away her aftermast and sails, got clear, and

away she went and left the privateer to look after herself. That seems to me a condition of events that might happen again, especially when two or three vessels are together, and it bears on the paragraph in the paper in which Captain Crutchley points out that the stem of a merchant ship is nearly as formidable as that of a man-of-war, and that a fleet of merchant ships have beaten off an enemy before, and the inference is that steam would give a better chance now to do it again.

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Captain PENROSE FITZGERALD, R.N.: Lieutenant Crutchley makes a sort of apology in the first paragraph of his paper for bringing forward the same subject on a third occasion. When I was coming down here, before I had seen the paper, although I guessed what the nature of it was, I was making up my mind that I was going to pat him on the back and thoroughly encourage him in hammering away. If we want a subject brought before the public it is no use stating it once and then dropping it, and I was rather afraid when I heard the last paper that that was what he meant to do. We see the principle of reiteration adopted to enforce all sorts of fallacies and falsehoods, I might say, "in another place," if it is not actionable, and I do not see why the same principle should not be applied to truth, and to a patriotic course like this, until he insists upon his countrymen taking it up and looking at it. We hear the Irish question and various other fads hammered at until we are sick of them, but here is a point which is vital to the existence of the Empire, and what I say to Captain Crutchley is: do not make this the last time; go on until you make them listen to you! There are several controversial points, but really the general tenour of the paper is so entirely to the point that one does not like referring to the points that one does not entirely agree with. There is, however, one point about the Navy. He says: "All the discussions which have taken place lately on the subject of our Navy have, as far as I have seen, been solely confined to the ability of our men-of-war to meet successfully those of our possible antagonists; the protection of the greater part of the commerce of the world has not been touched upon." I am afraid people will get into the fallacy of saying that *besides* providing a sufficient Navy to meet the enemy, you must have protection for your merchant commerce. Now if there is nobody to attack your commerce you do not want any one to defend it. If your Navy is sufficient to not only crush the fighting ships and the regular cruisers, but also the auxiliary cruisers and similar vessels, that settles the question. If there is nothing to attack you, you do not want any protection. I refer to this point because it is the one logical argument of the opposition. I think he made a most admirable allusion to the food supply when he said: "To compare small things to great, what happens if snow delays the ordinary traffic to the metropolis for three days?" We know what happens. Distress of all sorts. That is a very concise and admirable way of putting it, and I hope, whatever other part of the paper is published, that they will publish that. I had the honour yesterday of reading a paper very cognate to this subject at the Naval Architects, and I quite agree with the lecturer in saying that these large Atlantic cruisers which have been subsidized by the Admiralty will be wanted

at night. What does that mean? It means that during war-time one of these magnificent steamers that Lieutenant Crutchley has been talking about may have some valuable information to give to one of our cruisers, or a cruiser may have some very important communication to make to her, and neither can do it unless they lower a boat or approach within hail, which is not always an easy matter. Our possible future enemy may be kind enough to involve us in war during the summer when the days are long and the nights are short; but on the other hand we may be dragged into a war in winter when, as we all know, on some dull days, we could have no communication with each other between 4 o'clock one afternoon and 7 o'clock the next morning. Many Officers in the mercantile marine have thought about this, and two or three gentlemen, considering that our system in the Navy is too difficult and complicated, have sent up some plans to the Board of Trade for night signalling, and it has been my good fortune to have to look into those plans and report upon them. I examined them carefully, and came to the conclusion that they were certainly not so complete as our system, and were not more easy or more simple; but I would not trust to my own judgment only, and, therefore, put myself in communication with the Flag-Captain at Portsmouth, and asked him to be kind enough to give me the opinion of his Signal Staff. I sent these proposals to him, saying, "Please put aside every prejudice, and tell me if you think they are workable, and if they are more simple and more easily learned than our own." He replied that they were workable, but that they were not more suitable and not more easily learned than our own. So I came to the conclusion that if any system of night signalling is introduced, it must be the Morse system. When I say the Morse system, I mean the system we use in the Navy, and which was first introduced by my friend Admiral Colomb. We know that it is to him that we are indebted for having first introduced this flashing system of night signalling into the Navy. Now, I wish to point out to gentlemen of the mercantile marine the advantage of this Morse system. The only apparatus necessary is a lamp with a shutter or slide, which will cost, perhaps, 45s., and a steam whistle, which is already fitted to every steamer. There is no code-book required, and signalling can be carried on under any circumstances, by night as well as by day, and in fog as well as in clear weather. It would require a trained and qualified signalman in each ship to work it; but why should not our large steamers carry one qualified signalman? I do not for a moment suppose that night signalling could be carried on in our sailing ships or smaller steamers; but if the Admiralty and the Board of Trade would give their sanction it might be introduced into our large mail steamers, such as those of the P. and O. line, and the magnificent ships that cross the Atlantic. They might, perhaps, if it were authorized, provide themselves with a lamp and allow one quartermaster of each ship to be trained and requalify once a year, as our Naval Reserve men do. We might then have a system of signalling between Her Majesty's ships and the merchant service, and in the merchant service itself between one ship and another. If this system were once introduced it would probably become popular. When I was in the "Britannia" a few years ago, we rather went in for the use of the semaphore as well as the Morse, and I was surprised to see the way the boys took to it. I used to see them in the boats and in the cricket field making signals to one another with their arms. I believe, that if this system were introduced into the mercantile marine, it would grow; young Officers would learn it, and it would be taught on board the "Conway" and the "Worcester." The Morse system now holds the field, but if anyone can propose a better and simpler plan I hope he will do so.

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for their own trade routes, and we shall not be able to use them as war cruisers at all. They will be required to use their enormous tonnage to carry cargo, and to carry whatever to us will be most valuable: it may be coal, perhaps, to different stations. I think it probably will be coal, to fill up those unsupplied depôts which Lieutenant Crutchley so graphically brings before our minds, at the Cape of Good Hope and the Falkland Islands, and other places. I should think one of the best things to do would be to fill the "Etruria" up with coal and send her to the Falkland Islands. It sounds a big order, but it would seem to me to be the most valuable thing to do with her, because for ships of that tonnage to be simply used as protecting cruisers would appear to be an utter misapplication of their capabilities. I think he made a mistake in referring to the "Alabama," because, as far as I know, she only captured one steamer, and we must look for the sailing ships being laid up. He says: "I hear it frequently said that in the event of war our ships are to be transferred to a neutral flag." I am very glad he brought that point forward. It has been set forth, I think, by no less authorities than Lord Brassey and Mr. Forwood. It simply means suicide; it would be the end of the whole business: the British Empire would cease to exist. If you cut your throat, what more do you want? If your trade is transferred to a neutral flag you must give up business; it is strangulation, that is the end of all things. I hope the papers will put that down. Then with regard to the Declaration of Paris. It has been touched on several times in this theatre, but it has never been thrashed out. I do not see Mr. Baden-Powell here to-day. I should like to hear him again on the subject. Admiral Colomb mentioned Lord Thring yesterday at the Naval Architects, and the mere mention of the name so frightened Lord Ravensworth that he shut him up, and would not let him pursue the subject; the very name of Lord Thring was sufficient; he would not let him say a word about international law. It should be cleared up, though, one way or another, before war breaks out. I remember on the last occasion Lieutenant Crutchley asked, in a pathetic manner, what was to become of him if he was found fighting, whether he was to be hanged, because, he said, as a matter of personal interest, he would like to know: and I dare say he feels it quite as much now. The doubtful point should be cleared up. I do not know whether Captain Crutchley can explain this sentence: "There has been a great falling off lately in the number of First Class Reserve men." I wonder if he can give us any explanation of that. I think it is a terrible pity if that be the case, and there must be some reason for it, and I do think that they ought to be encouraged to the very fullest extent possible. With reference to Admiral Bowden Smith's observation on signals, it seems to me to be the very vital essence of the thing, and that his proposition is eminently practical, to get one man who can work the semaphore or the Morse code in each ship, and then to allow the system to spread, and it would be, I believe, as he says, contagious; the men would soon pick it up, and I have no doubt if it were once started in the merchant service, Captains passing each other on sea routes would signal to each other all sorts of interesting news, either with the whistle, the semaphore, or the flashing light, as the case might be. If it were once started they would use it, and the benefit of it when war came would be simply inestimable, because they would be able to communicate direct with every man-of-war they saw, and to give them information which might be of vital importance to the nation. A system of signalling, so simple and yet so comprehensive, would form the strongest possible connecting link between the two Services, and its value in war-time would be inestimable; but this, and all other organizations, must be completed in peacetime.

Rear-Admiral P. H. COLOMB: I should like to add my mite to what Captain Fitzgerald has said, and to hope that Lieutenant Crutchley will not drop this subject, but will go on hammering away until he gets it right. We have to recollect that, after all, this question has been debated in our country for a comparatively short time in our own day. I think the Chairman began it something like twenty-three or twenty-four years ago. We have been more or less hammering at it ever since, and I suppose in twenty-three or twenty-four years more, if we continue hammering, the question will be understood. The whole of our naval position is usually misunderstood by the ordinary Englishman, and I might give you a couple of anecdotes of what occurred to myself recently as a proof of what I have just

said. Last year as a part of the scheme we were then getting up, and which has produced such excellent results, I wrote to the London Chamber of Shipping and said to them, "I do not think the shipowners as a rule understand the difficulties they will be placed in in war; if you can get me an audience of shipowners, I shall be happy as far as my humble powers go to help you to consider the question, which is an important one." The answer I got was that an audience of shipowners could not be got together to consider that question, the season was against it. I waited until the season had changed, and I wrote again and said: "As the season has changed, perhaps you could get an audience to consider the question of whether you are going to retain your ships in war-time or to lose them;" and the answer I got back was—and it was a very remarkable answer, I think, I keep it carefully by me—that "I was a little mistaken as to the nature and office of the London Chamber of Shipping, that it did not only, as I seemed to suppose, represent the shipowners of London, but that it consisted of delegates representing the ship-owning body over the whole kingdom; and that, therefore, I must see that it was not the sort of body which ought to be addressed on the subject I proposed." Now, I will give you another anecdote. I read, as I suppose a good many of us do, much of what is said by the Press all over the country on the subject of defence, and amongst the articles a fortnight ago or thereabouts was a long one from the "Scotsman" discussing some of these questions, using my name and quoting me as having said certain things. The certain things I was quoted as saying were to my mind the greatest nonsense; and I was somewhat nettled at having such words put into my mouth. However, I sat down and wrote a long, and as it was characterized, a very "stormy" letter to the editor of the "Scotsman." I attached a piece of paper saying I presumed it was too long and too stormy for publication, but there it was. However, the editor put it in, and added a paragraph at the end of it. My letter explained some difficult questions of naval policy, and amongst them the question we have before us to-day. The editor added a paragraph at the end of it, saying that he had received great punishment for the small offence of misapprehending what I had said; that it was a very stormy letter, and really after reading it carefully, he was quite unable to make out what it was the gallant Officer meant; "but," he said, "after a little time we will endeavour to deal with this stormy letter." In a little time, in three or four days, there appeared a leading article, declaring that my letter was the most lucid description of naval policy which they had ever read. That is to say that my words, you see, fell at first upon absolutely blank minds; and Lieutenant Crutchley must understand that his words when they go out to the general public in England fall at first upon absolutely blank minds, and there is nothing to be done that I know of except to go hammering and hammering until those minds get sufficiently receptive to understand what it is you are talking about. Captain Fitzgerald dealt, I think, almost sufficiently with one point of criticism that I picked up, that was the apparent supposition that war-ships as built at present were not prepared for the protection of our commerce; that they were prepared for contending with the ships of the enemy, but that in some way they were disconnected with the defence of commerce. Now, my opinion is as to the new programme of the Government, that no person acquainted with what would have to be done in war, who studies it, can doubt that that programme has been drawn up directly and distinctly in view of the protection of our commerce. The classification of the ships, the numbers of the ships of the different classes provided, were quite enough to convince me at any rate that the protection of our commerce has been in the mind of the Government, and that the Government have at this present moment something approaching to regular plans which they never had before for the real protection of our commerce in war. I think Lieutenant Crutchley may consider that his former papers on this subject have helped that, and that this paper will still further assist it. The loss of the food supply is of course always touched upon, and we find in the country that question is again very much misunderstood. When we speak of "starvation" in the technical sense, it is held that what is meant is absolute starvation, an absolute stoppage of the food supply into this country. I am quite sure none of us mean anything of that sort. We know quite well that there is always such a thing as breaking blockade, and that it is almost impossible to cut entirely off the exit and entrance of ships from any port.

But this is what we do mean, that if it happens that our ships have not free passage over the sea, two things will come about: there will be a shorter supply of food in this country in consequence of a less quantity coming into it, and the price will certainly rise far above the natural level due to that circumstance. Also, this is quite certain, that at the same time as you lose your full supply of food you will also lose your full supply of raw material. How are you situated under those circumstances? Food has run up in price, labour has necessarily gone down in price. Are we wrong when we used the word "starvation" to imply that condition of things? I do not think we are. I very much agree with what the lecturer said as to the doubt that exists in our minds whether, even in the case of these subsidized steamers, it will be possible to remove them from their ordinary routes. I greatly doubt it. I think that they will have to be utilized in some way over their ordinary routes. As to dealing with captured vessels, I think that the lecturer rightly classifies the different methods of dealing with them; and then I think we may go back to history to see pretty well what would happen. The old privateer always brought out a number of spare crews on purpose to put them on board the captured vessels; and although we are not allowed to use the word "privateer" now, although the ship which will do the same or worse work as the privateer did will not be called a "privateer," yet I have no doubt whatever that this commissioned ship will take with her a number of spare crews. And then you must recollect that if one of these small vessels makes a capture of a big ship, such as the lecturer has spoken of, that will be sufficient for her purposes; that one big prize will mark the success of her cruise; she will be ready to go back into port again after having made that great capture, and I conceive that generally speaking the practice must be to put crews into the steamers when captured, and to endeavour to get them back into port; not only because of the value that is saved to the captors, but also because every steamer captured from us which goes into an enemy's port may come out of that port commissioned as a man-of-war and raider for the purpose of adding to the mischievous fleet which is troubling us. I will now state what I had not the opportunity of stating yesterday at the Naval Architects. Lord Thring in this theatre, a couple of years ago, in discussing an analogous paper to this, distinctly said that there was no question whatever about the right of a merchant ship to defend herself; that a merchant ship had a right to defend herself against capture by an enemy, precisely similar to that which any Englishman has to defend himself against a garrotter or burglar. Of course I quite agree with Captain Fitzgerald and Captain Noel that it is most important that this very elementary question should be laid down as settled by authority. I must confirm Captain Fitzgerald also about the "Alabama." I think if more than one steamer was captured by the "Alabama" there were very few. This much is certain, the "Alabama" made nearly all her captures not under steam but under sail, and it was because she made them under sail that she was able to have such a long life of it. Other Confederate ships which tried to make captures under steam soon expended their coal, and then disappeared into ports from which they never came out again. As to the transfer of the flag, we had that at the Naval Architects only yesterday. Here the question is raised again. It is quite forgotten, as the lecturer has so ably put it forward, that there are not flags enough to hold our ships, not nations enough to take them up. If you look into the law of transfer of the flag, as laid down by the international lawyers, you find that the conditions are very difficult to get over on the part of our shipowners, who think so lightly about the transfer of the flag. What it means is that they are going to sell their ships at a sacrifice, and never get them back again. There is one point which I believe is quite certain as regards France, which is the country after all that we have most to think about. France I have very good reason to believe is admitted by international law to be able to sustain the position that she will not recognize any change of flag which takes place after the declaration of war. So where are you? I, in common with previous speakers, would like to know more as to how it is, and to what extent, the Naval Reserve is said to be falling off. I have the highest possible opinion of the Naval Reserve, and I am sure we rightly rely upon their help in war-time. I should like to see their numbers greatly increased, and I think it is quite possible that a second-class reserve may come out of the failure of our attempt to work the defence of our shores through the volunteers. I take it that it is very likely that through

some second-class reserve that may be better effected. Perhaps I may be excused for adding a word upon the subject of signalling, which has been mentioned. I would like it to go forth through the Press that I am pretty sure that we should have had the flashing system in common use in the mercantile marine some time ago, had it not been for the direct interposition of the Board of Trade. Nearly the whole of the steamship companies of Liverpool at the time when the distress signals were changed, and when difficulty in the mercantile marine arose in consequence—the greater part of the steam shipping companies in Liverpool, on my moving, applied to the Board of Trade to be allowed to use that system to distinguish themselves at night, and to communicate amongst themselves, and the Board of Trade gave a distinct refusal.

Admiral BOWDEN SMITH: The Board of Trade are now willing that they should do so.

Admiral COLOMB: I am very glad to hear it. It ought to be known that we could have had the thing moving now, had it not been for their direct interposition. I was unable to ascertain the reasons for this forbidding, for it was a direct forbidding of the companies to use it. But after some months when I was beaten, and had lost, as it were, interest in the subject, permission was given. But the thing had passed, and I could take no further steps about it. I think that Admiral Bowden Smith is perfectly right in going for what is called the Morse system. The Morse system is simply the application of the flashing system of signals with the Morse alphabet instead of the figure signs which we use in the Navy.

Admiral BOWDEN SMITH: Did use.

Admiral COLOMB: Do use with the signal-books. It is a different system of notation, that is all that it really comes to. The fact that there is a difference of notation apart from the Morse system rested first on the form of our signal-books in the Navy, and secondly upon the immense difficulty of getting the Navy at that day—twenty-eight years ago—to understand what it had got before it. It would have been impossible then to have induced the Navy to adopt the Morse notation with the flashing system, it was hard enough to get them to adopt a notation which was very much more simple. But time has gone on, and for ten years past I have urged that the time was come for abolishing the original system of notation in flashing signals both by day and night, and fully adopting the Morse notation. And the signal-book in the mercantile marine lends itself directly to this, and almost compels you to adopt the Morse notation. I feel quite sure from what I hear that some of the larger steamship companies are almost on the point of moving for themselves in this matter, and that the very slight encouragement which they are now getting, and which I hope will be continued, will induce them to adopt it. I quite agree that as soon as the thing is started, it really is so simple and easy, it will grow. The fact that the Morse notation is used for nearly all telegraphic messages and all telegraph work makes it all the more easy to establish in the mercantile marine, and its already being established in the Navy gives a further advantage to it. In time of war the fact of the mercantile marine being able to communicate with one another and with the shore, for that is most important, at considerable distances by night and by day, and also in fog, all of which are to be done by the flashing system, is one of the importance of which cannot be exaggerated. I am very much obliged to the members for the attention they have given to me.

Sir J. C. D. HAY, Bart., K.C.B.: This very excellent paper which Captain Crutchley has put before us requires very little explanation to make it clear to any one of us, but I am particularly anxious that in his reply he should make it apparent to those outside this theatre, as it is entirely apparent to those within it, that these suggested lines are merely a very small fraction of the lines which would have to be protected in case of war: that, as a matter of fact, they are but two lines out of at least six important lines which it would be necessary for the Navy to protect, or on which it would be necessary that merchant steamers should be armed. Captain Crutchley should also make it apparent to those who may read the paper and may not have heard, or seen the map which he has produced, that the illustration given of these routes depends upon the closing of the Suez Canal, which he anticipates may possibly occur, and I trust it may occur, for it would be greatly to our advantage if the Suez Canal were blocked in war. In such an event, a large proportion

of our commerce would come upon these routes. But with regard to these routes I should like to say this: Captain Crutchley appears to assume that the River Plate, Rio Janeiro, Bahia, and Pernambuco, would be open to our commerce. My impression is, Brazil being neutral, and looking to recent interpretations of contraband of war, they would not be so open, and the commerce coming through the Straits of Magellan from Australasia or the Pacific would have no place to call. Sandy would be closed in the Straits of Magellan; the Falkland Islands are not protected; Berkeley Sound is not in the scheme of these harbours to be protected and protected coaling stations. It would therefore be necessary, in my opinion, for that route which Captain Crutchley suggested, along the east coast of South America, to be diverted either to the Cape or to St. Helena. The Cape is about to be pretty well protected. St. Helena, which has been mentioned as having been omitted, but which, no doubt, Captain Crutchley will refer to in his reply, may be rendered impregnable, and may be looked upon as a rendezvous, not only for vessels passing round the Cape, but for those diverted through the Straits of Magellan away from the coast of Brazil to the protected stations on the route homeward. Sierra Leone no doubt is in process of being made very strong; I believe the fortifications are planned, and some of them are commenced, and the guns are about to be made. But it would not be a very pleasant place for all the fleets to rendezvous. Good though the harbour is, as we know, the climate is not the most salubrious. It seems to me that the route which is described on that chart is not a route which could be adopted, in consequence of the absence of coal supply and of the fact that there is no pretence whatever to fortify, protect, or hold the Falkland Islands. There is another most useful coaling station, but it is not to be protected. I allude to Ascension, a most valuable place, which, of course, may get into the hands of a privateer or a foreign Power with great facility. With regard to the question of armed merchant ships, there seems to be a general belief that these merchant ships are very fast, that they are faster than any possible enemy who would presume to interfere with them, and that it would be a case of bolting all over the world, and that there is to be neither convoy nor protection necessary. I recognize the great speed of these vessels, and I myself would be in favour of convoys under numerous merchant ships, partially armed in the manner suggested by Captain Crutchley, guarded and protected by men-of-war capable of steaming as fast as they. But that appears not to be a plan which commends itself generally to the public mind, and I fear we shall lose many single ships unless some means be adopted to give the merchant ships that protection which, in my opinion, I believe they are fairly entitled to, use to defend themselves against all evil-doers. The question is, where are you to get the guns? Captain Crutchley, perhaps, can tell us. I remember when, more than twenty years ago, it was intended for the first time that merchant ships should be taken up for the assistance of the Navy in war-time; it was then proposed that a certain number of guns should be made and put in stock for the purpose of arming them. Many merchant ships have been fitted for the purpose, but the guns are not yet made, and it has been twenty-two or twenty-three years, I think, since that order was given. The privateers which we have to fear, I think, are not entirely the privateers of the Powers with whom we might expect to be at war. I believe there are other enterprising nations who would lend themselves to that particular business, who would require flags which might be valuable to them, and having got those flags there are other nations which have not themselves entered into that most wretched and disagreeable Treaty of Brussels, who would perhaps rather go to war than not defend their subjects if they were successful in the art of privateering. I should be glad to hear from Captain Crutchley, like many of my brother Officers, if he could state why it is that the First Class Naval Reserve is no longer so popular as it was. Is it that the regulations under which the men are accepted are too stringent and higher qualifications are expected, or is it that trade being better they find employment elsewhere, and do not care for the fee which they get to bind themselves to this country?

Admiral Sir E. OMMANNEY: As a naval Officer it is most gratifying to hear from so competent an authority as Captain Crutchley on matters concerning the mercantile marine the views which are entertained by that community on the very important points contained in this valuable paper. I am much struck with one proposal

regarding the armament of great ocean steamers, namely, that they might be fitted with the power of ramming an enemy. I think this is a very practical and simple suggestion, and one which could be carried out in the construction of these splendid vessels without entailing any serious expense on our national companies, and would involve no interference with the arrangements and qualifications of these vessels; as they are driven with such a prodigious velocity they would then be provided with a formidable weapon of destruction upon warships of inferior speed. As an old signal Officer I am pleased to hear that the means of signalling by night between the Navy and mercantile vessels is being organized under the auspices of such a very competent and experienced Officer as Rear-Admiral Bowden Smith.

Captain CURTIS, R.N.: I might suggest, with respect to the relief of these captured vessels, or what is to be done with them, there is another way of redeeming them. The "Alabama" released several of her captured vessels upon their Captains giving bonds, and I believe that those bonds were all honourably met. That would be in great favour, I think, with the crews of the ships. I do not know whether it would be legal or politic on board a man-of-war or not. We are often compared to a fortress in war-time, shut up, and liable to be cut off from our supplies.¹ I never heard it suggested anywhere that we should have three months' corn stored in the country; in Gibraltar and Malta they have a year's store of grain. It might be met in this way, by the Government giving a bounty to merchants or paying them some money for keeping so much corn stored. Captain Crutchley said history repeats itself. Lately I read the history of the old East India Company's service. Whenever our vessels were in a minority our seamen and merchants always suffered, and we lost the Moluccas in consequence; and when Oliver Cromwell took matters into his hand he made the Dutch pay 250,000*l.* compensation for the maltreatment of our merchants and men. With respect to coal, Captain Crutchley said our vessels might use Rio Janeiro. I believe, from what I can learn of the matter of coal, if an English man-of-war puts into a neutral port, that neutral port will only supply them with coal to go to their next coaling station, and they cannot use that coal for war purposes, unless in self-defence. I believe that is correct. There is another point that Captain Crutchley has not touched upon, and that is the route from the Falklands' to Vancouver. Vancouver is getting a very important place, and I suggested to one of the late Commanders-in-Chief on that station that it would meet the approbation of his countrymen if we could get one of the Galapagos Islands, and I believe Chatham Island is a very suitable point, being equidistant between Falkland Island and Vancouver, in a straight line, about 7,000 miles. That group belongs to Ecuador. Ecuador is not a very rich country, and 50,000*l.* might buy one of those islands, and any vessel rendezvousing there—for instance, if you had no coaling station you could put your ships in between the islands, and a man-of-war at either end would prevent any ship attacking them. I did not understand exactly what Captain Crutchley meant by arming merchant ships. I presume the Government would never put arms on board merchant ships unless they thought they were authorized to use them.

NOTE.—Albemarle Island is 4,700 feet high: a good look-out could be kept from there; the islands are in a very commanding position.

The CHAIRMAN (Sir J. Colomb): Before asking the lecturer to reply to the questions that have been asked, I may be permitted to add to the general chorus of approval expressed, not only of the paper but of the persistency of the efforts of the lecturer. It has been pointed out that the people of England are, in spite of this Institution, in spite of many able voices that have been raised, still blind and deaf to the real gravity of this whole question. I think this Institution is also to be especially con-

¹ Page 338, Whittaker:—

Value of wheat and flour imported for 1887...	£31,365,802
Value of three months' supply	7,841,450
5 per cent. interest	392,070

compensation for money dormant the merchants would receive. I think it would, if war were likely to occur, be wise to have six months' stored; it would not amount to *1d.* in the pound income tax.—J. D. C.

gratulated that an Officer of the mercantile marine of practical knowledge, of practical experience, and at this moment closely and absolutely connected with it, comes forward to give us his views upon this most important question. I think the matter would have been very much better advanced years ago, if the mercantile marine had had more Officers who not only thought of these things but were good enough to come and give the naval Officers and the experts who meet here, an opportunity of hearing their views and of having that joint consultation which is necessary for the organization and protection of the commerce of the Empire. I take the grand lesson brought before us in this paper to be, in the first place, that our huge commerce is almost at the mercy, as far as any means of defending itself goes, of improvised raiders under other flags, and that it brings before us this great fact, that practically nothing has been done with regard to the real organization of the means it offers for assisting the Royal Navy by its own protection to a certain extent, and that nothing whatever has been done by this country either to suggest a scheme or to work it out. I do trust and hope that this paper, seeing the marked approval it has met on all hands, will, as my brother said, have a direct bearing and influence upon the Admiralty, and I hope that one of the matters that it will make the Admiralty reconsider is their present programme of subsidizing the best of the mail steamers for the purpose of removing them off the lines in time of war. I took a very strong line in that matter, because I moved the rejection of the first vote, having ascertained in the House that the Admiralty did intend to remove them from the lines in war; I moved the rejection of the vote, and stated my reasons for considering that the plan was bad in theory and would turn out bad in practice. And I might mention, in order to emphasize what the lecturer has said, that there is another point to be considered in removing these steamers from off these lines. Our commerce may be grouped into two classes—the steam commerce and the sailing commerce. I do not speak of it, for I think we are all tolerably agreed upon this, that war means the extinction of the sailing commerce, and therefore it is only necessary, as practical men looking at it from a practical point of view, to consider the steam commerce. Well, now that may be grouped into two great classes, the regular liners, trading regularly between fixed points, and what may be called the all-round trade, and of course there are difficulties connected with organization for protection of the all-round trade that do not present themselves in the case of the regular lines. Now the most important lines are those lines that connect our own Empire, and those are the lines that, unless you are prepared to lose that Empire, must be maintained, and not merely maintained by the Royal Navy but the actual traffic between these different parts of the Empire must be kept going. What happens when you remove the best ships? Take India, take the P. and O.: the proposition is to take the best of the P. and O. ships off the lines on the outbreak of war, and to pay them in peace to enable you to do so. When war comes, when carrying out that policy of removal off the line, it will be a matter of the most vital importance that your direct communication should be kept up, and both as regards the actual value of the trade and the rapidity of communication that will be a pressing necessity in war. What are you going to do? You are going to take the best ships off the line, those ships that possess the quality that gives the greatest safety to a merchant steamer, that is her speed. You are going to take the fastest ships off the line on purpose that when the hour of peril comes the remainder of the line shall be in extreme danger. And you do more than that: you send up the price of freight on that line, because you at once raise the insurances. You are defeating your own object, and for this reason, you take the best ships off the line: you force your mails, your passengers, perhaps your troops, your valuable cargoes, your specie, everything into slower ships, and in proportion—I think it is quite obvious—to the speed and power of the merchant steamer, so will be the insurance risk. Therefore I do trust and hope that coming from a man of practical experience like the lecturer, being backed up by the naval Officers as he has been on that point in this theatre, the paper to which we have listened to-day will certainly put a nail in the coffin of a policy which we cannot look at without dismay. To give you another reason. The P. and O. lines to India, the "Union" and the "Castle" lines to the Cape, the New Zealand lines, all these are subsidized for keeping up the internal postal communications of the Empire. How has it come about that they

are so good and have such magnificent ships? It has come about in this way, that the necessities of your position in peace demand it. They have been subsidized and assisted by mail contracts. These mail contracts—take the case of the Cape or India or Australia, whichever case you like—these subsidies are joint subsidies made up of contributions from the mother country and your Colonies and possessions, which they connect by their operations of trade. And I am quite certain of this, that when war breaks out, though the Admiralty may have paid during peace for the right of taking them off the lines in war, the Admiralty would not be able to do it for this reason, it would be breaking faith with your own Colonies and dependencies at the hour when they most require their mails, passengers, and trade services best performed, and you propose to cripple them all by removing from their lines their fast vessels. What are you then to do instead? I agree with what is indicated in this paper. You must deal with the mercantile marine in groups. The organization of your mercantile marine for the defence of your Imperial routes, connecting your own Empire, must, I believe, be your first care. You must deal with companies as you now deal with the individual ships. The "Castle" or the P. and O. and all the other companies must understand that when they get a postal contract it means they are to run in peace and in war, and further it means that it is the business and duty of the Admiralty so to promote and foster the growth of organized fighting efficiency of the various companies' fleets as far as can be done without undue interference with trading requirements, that they shall be as it were an armed fleet in war, carrying on the communications of the Empire, and also running down the lines of the all-round trade by sometimes perhaps a little diversion from the ordinary route. That appears to me to be the true policy, and the policy which I hope, by the persistent efforts of the lecturer and such speeches as we have heard to-day, may at last be forced upon the mind of the Government. The lecturer has said, "I cannot conceive any one calmly contemplating the transfer of our ships to foreigners." I will emphasize what my brother said with regard to the apathy of shipowners. I heard the Vice-Chairman of this very Union Shipping Company in the House, within the last few days, calmly indicating to the House that it was preposterous and absurd to suppose that you could protect your commerce in war. No doubt, in his ignorance, he believed that, and has quoted the "Alabama." Well now, I think that people quote the history and the results of the cruise of the "Alabama" without really having thoroughly studied the question. I think the lesson to be learnt from the career of the "Alabama" and the American War is a very remarkable one, and a lesson we may well take to heart—the want of appreciation of the American Government at the outbreak of war, of what naval war meant. You may remember that on the outbreak they called together a sort of council of eminent men of New York to ask what should be done for securing the blockade of the Southern States, and this council suggested that if they had thirty ships they could blockade the whole coast of the South. In a very short time, however, it was found they could hardly, with improvised war vessels, do it with 600. But the other lesson which is to be learnt by the "Alabama" is simply the lesson which is largely indicated by that very chart of the lecturer's, and those who have read and studied the cruise of the "Alabama" will find that her success, as Captain Semmes himself points out in his book, was due to the fact that the Navy Department of the United States knew nothing at all about their business. I should like to quote a passage from his own journal. He writes about the despatch of vessels to catch him, and he says, writing in his journal at sea in the West Indies, "The enemy has done us the honour to send in pursuit of us the 'Powhattan,' the 'Niagara,' the 'Iroquois,' the 'Keystone,' and the 'San Jacinto.' Not one of these vessels ever caught her, although there were several others looking for her;" and then he explains the reason: "The Mona passage being the regular track of the U.S. commerce, it was looked upon as almost a certainty that at least one cruiser would be stationed for its protection." But there was none. And then Captain Semmes, writing just off Pernambuco, says: "Where can all the enemy's cruisers be, that the important passages we have lately passed through are all left unguarded?" And then he finishes off: "The sea has its highways and byways as well as the land. . . . If Mr. Wells (Secretary of the Navy Department) had stationed a heavier and faster ship—and he had a number of both heavier and faster

ships—at the crossing of the 30th parallel, another at or near the Equator, a little to the eastward of Fernando de Noronha, and a third off Bahia, he must have driven me off or greatly crippled me in my movements. A few ships on the other chief highways, and his commerce would have been pretty well protected. But the old gentleman does not seem to have thought of stationing a ship anywhere." The whole lesson of the "Alabama" is this, to exercise our intelligence and our forethought to recognize the real work you would have to do in war, to utilize our resources in every way, and proceed in the manner and direction indicated by this paper; and as to our commerce being swept from the sea, I for one do not believe it, unless we are unworthy of the trust imposed upon us.

Lieutenant CRUTCHLEY: There are one or two points upon which questions have been asked me. The first one is that matter of night signals between vessels at sea. I do not think, myself, there would be the smallest difficulty in introducing them into the merchant service, and I feel convinced it could be done with very little trouble, but at the same time, if these Morse signals are introduced it would be as well for vessels on the long routes to have paper sealed books, for which I asked in my last paper. There would be no more trouble in using them in war-time than in using the ordinary books. My reason for not mentioning St. Helena as a coaling station was because, if you look at the distance between Cape Horn and St. Helena, there is a very great difficulty—the difficulty as between St. Helena and Rio and the Falklands. Vessels coming from Australia would have too far to steam, and that was the reason I omitted it. Of course it would be of use for vessels between Table Bay and Sierra Leone, but I do not see that it would be practical to make one convoy if St. Helena were made a rendezvous, in other words, for the ships to come from Australia *via* Cape Horn to St. Helena, and join the Cape ships there; it would be too far to steam. Captain Fitzgerald supposes that if our Navy is increased it will be able to cope with all the enemy's war-ships, so that there will be none left to harry our commerce. If other nations are to be bound by the Treaty of Paris with ourselves, and unable to carry guns and unable to fit out their merchant ships, there would be no necessity for us to do so, but it appears to be assumed, and I think we are fair in assuming, that foreign nations, France, for instance, would not consider herself hampered by the Treaty of Paris, and they would undoubtedly fit out their faster vessels with guns in such a manner as that they could harass and catch ours.

Captain FITZGERALD: Are we to understand we are to be bound by the Treaty and others not? I cannot accept that.

Lieutenant CRUTCHLEY: The French mail steamers undoubtedly have privileges denied to our own. They claim the right, in the Australian ports, of men-of-war, and they have it, so that when I ask that these mail steamers of ours should be armed and put into a condition of defence, as I have said several times, it is not any question of their contending as men-of-war, but simply putting them into a condition to enable them to meet vessels of their own class on equal terms, and I think it very hard to see that there should be a one-sided game, and that these vessels should have privileges which we have not.

Captain FITZGERALD: Does not your R.M.R. give you the same authority to fight as a Frenchman?

Lieutenant CRUTCHLEY: I think it does; I do not think there is any doubt of it, but the fact remains that these Messageries steamers have rights which are denied to us. As to the falling-off of first-class men of the Reserve, I am unable to give any reason for it, but that it is so I have on very good authority. I think if some effort were made to encourage the Reserve, the thing would be altered. Seamen have deteriorated in many respects and are not as well qualified to maintain their rating as they were; they cannot do the old tricks of sailing in the way they were done twenty years ago, they have not the training, but they are as good Englishmen now, and as good for the work they have to do, as ever they were. I have heard people say there is a prejudice against carrying Englishmen in their ships, and they prefer foreigners. I can only say, from what I have seen of Englishmen, I have sailed with English crews under the Blue Ensign for the last twenty years, I have had no trouble worth speaking of: they have always done their work well. Sir John Hay spoke as to where the guns were to come from that were to be supplied

to these vessels. In the year 1863 there was a circular issued by the Admiralty that they were prepared to supply guns to vessels of a certain size if the owners would guarantee to build magazines and keep things in proper order. I tried to work on that end to see if there was anything to be got out of it, but every one has forgotten all about it. But if they thought it was necessary to do it at that time, I think it may be found necessary to do it now, and I think from four to six quick-firing guns should be supplied and put in vessels on these long routes. In conclusion, I have only to thank you for your very kind reception of my paper.

The CHAIRMAN: I am sure you will all heartily agree that the lecturer deserves a most hearty vote of thanks.

THE COLUMN v. THE LINE AS THE FORMATION
FOR MOVING RESERVES IN THE INFANTRY
ATTACK.

(N.B.—Written before the issue of the new Infantry Drill.)

By Captain H. J. CRAUFURD, Grenadier Guards.

THOSE who were present as spectators at the great German manœuvres last autumn must have watched with keen interest the system of infantry tactics there practised, a system widely differing from our own on more points than one.

The division of the attacking force into fighting line, supports, and reserves is much the same as with us. The fighting line moves forward in extended order, greater attention being paid to correct alignment and interval, and less attention to cover, than is the case in England. Behind the fighting line come the supports followed by the reserves, first the smaller regimental reserves, then the greater masses, brigades and Divisions intended to overwhelm the defence, and by sheer weight of numbers to bear down all opposition.

Now these supports and reserves, be it noted, instead of advancing one behind the other in successive lines as is the custom in England, are moved in column formations, not in large columns, but in compact little masses. The supports are in company columns, that is to say: the three divisions ("zugs" as they are called) into which the company is divided, moving one behind the other at about five paces distance.

The reserves following the supports are in somewhat denser formations, generally in line of company columns at close interval. The great reserves in rear follow in column likewise.

This column formation is not only used when at a distance from the enemy, but it is maintained up to the very last, and the reserves sometimes do not deploy, even when the fighting line is reached, but advance to the assault in company columns.

On seeing these methods, so different from our own, two questions at once force themselves on the mind.

1st. Why do the Germans prefer the column to the line for moving their reserves forward to the attack?

2ndly. Given that these reasons are sound for them, do they apply with equal force to us?

Dealing with the first question, viz.:—the German preference for the column, we know that, taking all other things as equal, the column is infinitely preferable to the line as a formation for the easy movement and direction of troops. There would be no question as to its use always for the movements of reserves and of all bodies of infantry not at the moment required to use their rifles, if it were not that a

column when exposed to aimed fire is much more vulnerable than a line, and that troops moving in the compact column formation would therefore suffer more severely than if they were extended in line.

To us in England this question of losses on the battle-field must necessarily have great weight; to the Germans, however, and other Continental nations having vast numbers of trained soldiers at command, this point has not the same importance. It is not so important as is the absolute expediency of rapidly crushing the enemy and extracting terms of peace, which may, with the least possible delay, relieve the nation from the immense strain entailed on it by the mobilization of well-nigh the whole of its male population.

Hence, in the case of Germany, the question of losses must give way to the importance of employing formations by which their troops may be pushed forward to the attack with ease, rapidity, and in numbers sufficient to bear down all opposition. The column certainly better meets these requirements than does the line, with, however, one important proviso, namely, provided that the greater demoralization caused by the larger losses in column does not outweigh the moral and material advantage which the compact formation possesses for leading men forward in the face of danger. In other words, provided the extra danger be not sufficient to outbalance the extra power of facing danger, which is inherent in a body of men moving in a compact mass under the effective control and influence of one leader.

The Germans have evidently decided that their men can be led nearer to an enemy in column than in line, that the element which we may call *power of command* (or putting it otherwise, *driving power*), afforded by the column formation, will, in spite of greater losses, succeed in carrying the men further in the face of danger than the element *greater safety to life*, which is the attribute of the line formation; hence the adoption by them of tactics which, to English notions, appear to be uselessly murderous.

Are they right in their choice?

This question their next campaign alone can answer decidedly, but a little consideration will show that there are several points, on which we have not yet touched, which tend in favour of the column tactics; tend rather to remove the great objection to them that they will afford so good a target for the enemy's fire that men will not be got to face the danger.

Let us examine these points with a view to discovering whether the danger of the column is really so great in practice as it seems to be in theory.

Firstly, an attack we are told should always begin by an artillery duel, and the infantry should not advance to assault the position until the guns of the defence have been completely or almost completely silenced. Under such circumstances the attacking infantry advances without molestation by artillery fire, and artillery is what columns and all close masses have most to fear. Granted then, that generally speaking, there will be nothing or next to nothing in the shape of artillery fire to be feared by the attacking infantry, and we find one great objection and danger in the column tactics removed.

Another point in favour of the column is this, that as the crisis of the attack approaches, the attention of the defence will become more and more absorbed on the front line of the attackers, and consequently the great majority of shots will be aimed at the firing line, and not at the reserves coming up behind; these reserves can therefore advance in what formation they like with almost equal safety, and the truth of this stands out more forcibly still when it is remembered that the dense smoke caused by the firing line of the attack will certainly hide to a great extent, if not entirely, all the troops moving behind it. No doubt most of the bullets fired at the front line of attack will miss it and pass on as ricochets or otherwise towards the reserves, but it is quite possible that if those reserves are moving forward in a number of small columns, they will actually be less exposed to this description of fire than would a succession of lines. The reason is this, that, taking as an illustration any one bullet among the thousands passing through or over the front line of the attackers, that bullet is surely more likely to find some human body obstructing its path if the ground in rear is, as it were, striped by a series of lines coming one more or less closely behind the other, than if that ground is dotted over by a number of small columns at more or less wide intervals apart.

This leads us to the most important point of all, and one that should have an increasing weight in the future with the ever-increasing velocity and consequent flatness of trajectory of bullets fired from improved rifles.

Supposing now the reserves to be moving in successive lines, they will be gradually getting closer together—each gaining on the one in front until, as the moment of the assault approaches, the distance dividing them will perhaps in the case of the two foremost lines be, say, 100 yards, while those in rear will be at a somewhat greater distance apart. Under these circumstances, supposing the case of the ground being either level or falling at a uniform gradient, the low trajectory of the bullets from modern rifles would probably ensure almost every bullet hitting somewhere in the lines—either directly or by ricochet.

It is obvious that a badly-aimed shot fired at troops advancing in a succession of four or five lines, one behind the other, though missing the line aimed at, is very likely to strike one of the lines in rear; but a bullet fired at troops advancing in columns, if it misses the column aimed at and goes over it, is not likely to find another column in its track for, for obvious reasons, columns would avoid following each other. In the latter case it may be urged that a column is so easy to hit that it cannot well be missed. This of course is true enough when circumstances admit of accurate aiming, and in any case against a big deep column, a formation which no one, under any circumstances, would advocate in the present day; but in the fever of the last moments before the assault, it has been found that men take indifferent aim and generally fire too high, and so a small short column—such as the Germans use—could very easily pass on compara-

tively unharmed by the hurried inaccurate fire of the defenders.¹ The bullet then which fired against columns misses its mark and goes over the column aimed at, is less likely to find anything in its path in rear, than is a bullet which misses its mark against lines, for behind every line other lines are following, whereas the columns naturally avoid following each other.

In fact every improvement in rifles, tending as it does to flatten the bullet's trajectory and so to lengthen the space over which in its course it travels at a dangerous height from the ground, strengthens the argument in favour of employing small columns for bringing up the reserves rather than lines.

Against accurately-aimed rifle fire, or against artillery, these arguments do not hold good, as the column then affords an easy mark; but, as before urged, few attacks will be made until the guns of the defence have been silenced, and the infantry a good deal shaken, and as the attack approaches, the fire of the defence will be concentrated on the first line, and will probably be inaccurate and out of hand.

In conclusion, as the last of the considerations which tend to lessen the disparity between the exposure to losses in column compared to that in line, we may mention that it is probable that an attack by columns can be got over the ground a good deal quicker than can a series of straggling lines, which means of course that in the column attack the men would be a shorter time under fire than in the line attack.

It will be remembered that the question which we set ourselves to consider first was whether the objections to moving reserves up in column, namely, the additional liability to losses, and consequent deterrent effect on the men of the fear of death, are so great that the manifest advantages of the column formation for command and movement must be thrown over in favour of the safer and less exposed line formation.

In the light of the various considerations we have just been examining, what answer are we to give? May not the danger to life entailed by the column tactics compared to the line, in view of the ordinary circumstances of the attack, have been over-estimated? Though the line may well be the safer formation, still in practice, when the attack is considered in the light of human nature, the disparity between the two formations as regards exposure is considerably less than it appears to be in theory. Are we, for the sake of saving a few lives, to willingly throw over all the advantages that the column offers for leadership and command.

A column can be led forward and guided into the firing line at a point desired, so as to fill a gap, or strengthen a weak place, or

¹ Captain Mayne in his "Fire Tactics" says, "But with such fire (*viz.*, very rapid fire) we must consider the excessive fatigue that it causes, the right shoulder becomes bruised and very fatigued by the recoil, and the muscles of the arms and shoulders, especially those of the left arm, become unsteady by a sort of nervous trembling; the rapidity of fire quickly diminishes, notwithstanding any muscular efforts, which tend still more to weaken the firer, and so takes from his fire any kind of accuracy, that the best shot would miss a battalion column at 100 yards under such conditions.

reinforce a portion of the line that has suffered unduly and seems disinclined to advance, this in itself is an advantage difficult to overrate. Compare this to an advance of successive lines, unable like columns to thread their way through broken ground and so get concealment and cover, but advancing perhaps by alternate rushes, an operation very likely to result in great confusion, one portion of one line overtaking and getting mixed up with the line in front.

It is quite right, of course, that the advanced force leading the way in order to prepare the attack by fire should be in line extended, just as in the storming of entrenchments in the Peninsula Napier tells us that skirmishers preceded our storming columns to keep down the enemy's fire. But necessary as the leading line is for the development of fire, why should the troops in rear who cannot fire move in lines; may it not be because of an umpire-bred system of tactics developed on the manœuvre ground, where speculation of loss is all in all, and the moral difficulty of getting your lines on is nil, as they have nothing to fear from blank cartridge?

If the Germans, with their admirable simplicity of drill and rapid system of training, do not like to trust themselves to moving their men in line, how can we have confidence in being able in war, with ranks filled with recruits and reserve men, to do better, our drill being more complicated and taking longer to acquire?

Is it wise to sacrifice all the great advantages of column tactics on the theory that the loss they will entail will be disproportionately great, a theory which, supposing the arguments already given are sound, is a theory only and not true in practice?

In the latter periods of the 1870 campaign, we find the French unable to move their newly-raised troops otherwise than in columns. In the campaign of Belfort, the repeated attacks of the French, against Von Werder's position on the Lisaine, were made in dense columns, too huge and unwieldy certainly to be anything more than gigantic targets for the German fire. Still they found columns the only possible way of getting the men on at all. Had their organization admitted of their splitting their force up into small columns, each under efficient command of an intelligent leader, trained to this system of attack, the result of those three days' fighting, in spite of the rawness of the troops, might have been very different. The column system must depend upon using small columns, allowing of mobility and presenting a small object for fire. The column should be reduced in size as far as is compatible with efficient leadership.

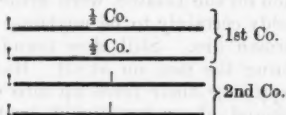
Do we in England, if I may venture to criticize, sufficiently consider the auxiliary forces in framing our system of tactics? In the event of invasion the Militia and Volunteers would have the principal part to play. Is our present system of attack suitable to them as well as to regular troops? The experiences at Belfort just quoted, and every page of military history, teach us that only the most highly-trained troops can be successfully moved in line on the battlefield. Napoleon himself found, in his later campaigns, that he had to incline more and more to compact formations, in order to move his recently recruited and half-trained armies.

If goodwill and courage could do everything, our Volunteers and Militiamen would be equal to any task, but no amount of goodwill can make up for the system and routine which, in course of time, soaks discipline and the spirit of submission to his Officers into the regular soldier, nor will courage in individuals accomplish victory on the battle-field, unless the system of tactics and training adopted enables the commander to apply his forces and guide his men in the way he wishes.

Will it be possible to maintain this all-important control over roughly trained troops, such as are our auxiliaries, if they are spread over the battle-field in a series of loose lines? May not the conclusion force itself on us that our present tactics admit of amendment, and that we should be ready, at least in the training of our Volunteers and Militia, to advance to the attack throwing forward a firing line to prepare the way, but following up with the main forces in small compact columns?

As regards the size of the columns, the Prussians, as they get into the zone of hot fire, split up their troops into company columns, that is to say each company, 250 men or so, is moved with its three "zugs" in column. These can be quickly deployed and welded into the firing line when it is reached. Probably we in England would find half-battalion quarter columns the handiest, the Majors being in command, and Lieutenant-Colonel superintending and giving a directing impulse to the whole. Such a formation would fit in well with our present organization. The half-battalion column would be handy and easily moved and deployed.

If it is objected that this column is unnecessarily and dangerously large, then an alternative in the form of double company quarter column of half companies might be adopted.



In war the question of deployment on reaching the front line will not trouble us much. By the time the column has reached the front line it will probably be only a shapeless lump of men, but it will be a lump and not a straggling string of individuals, and the lump will be marching forward, which is the chief point, imbued with the confidence which a united movement of a concentrated body of men gives to each individual of its body, and submissive to the will and direction of its leader.

With how much greater confidence will that leader take his men into action, all of them in hand and under his eye, than if they were strung out into a long line, out of reach of voice and beyond the influence of example?



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18

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Qualification
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I give and bequeath unto THE ROYAL UNITED SERVICE INSTITUTION, situated in Whitehall Yard, London, the sum of

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By order of the Council,

B. BURGESS, Captain,

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